

Primary Perception

Biocommunication with Plants,
Living Foods and Human Cells

Cleve Backster



WHITE ROSE MILLENNIUM PRESS
Anza, California

TABLE OF CONTENTS

Acknowledgments	9
Introduction	11
Chapter One:	
The Famous Dracaena Plant	21
How It All Started	22
The Next Step	26
Chapter Two: Early Observations	28
Need for Clear Intention	29
Plant Territoriality	30
Plant-Caretaker Attunement	31
Plant Attuned to Human Travel	32
Attunement to Non-human Life Forms	33
Termination—the Ultimate Threat	34
A Visit to the C. H. Stoelting Company	35
My Attempt to Follow Scientific Methodology	37
Visitations	38
Additional Plant Observations	39
Attempts to Screen	40
The Power of Observation	41
Chapter Three:	
The First Published Experiment	43
Attempts to Replicate	48
Important Details	49
Chapter Four:	
Initial Reactions from the Scientists and the Public	51
An Interesting Visit to Yale University	52
A Lab Invasion by Curious Minds	53
Television Appearances	54
Catalyst for Discussions	56

Soviet Scientists Respond	57
<i>Christian Science Monitor</i>	58
Music, Plants and Marcel Vogel	59
Dr. Granger's Provocative Remarks	60
The U.S. Congress Asks the Question	63
American Association for the Advancement of Science	64
<i>Science News</i> Article	66
Failures to Replicate	70
Three Trips to Brazil	71
Chapter Five: Observing Eggs	73
Electroding the Egg	74
Strange Cyclic Activity	75
Tapping into the Etheric Field	75
From GSR to EKG and EEG	76
Egg Response to Environmental Stimuli	78
African Violet Responding to Egg	81
Chapter Six: Tuning In to Live Bacteria	84
Electroding the Yogurt	85
Friendly Bacteria vs. Unfriendly Bacteria	88
Friendly Bacteria vs. Vodka and Tonic	91
Evidence of Prioritizing	93
Steve White Joins the Research	94
Kombucha Tea	97
Yogurt Reacts to Antibiotic	99
Chapter Seven: From Animal Cells to Human Cells	104
Early Research with Human Cells	107
A Door Opens	109
The Power of a Picture	112
An Intelligence Agency's Replication	114
Examples from the Published Report	116
Continuation of Human Cell Research	119
Chapter Eight: Biocommunication Research & Current Scientific Attitudes	123

Need for Paradigm Change	123
Reflections	124
Col. John Alexander and the National Research Council	125
Back to the University of Missouri	126
Brian O'Leary Explores Inner Space	127
<i>The Secret Life of Your Cells</i>	128
Fetzer Foundation Grant	129
Dorothy Retallack Research	129
The Institute of HeartMath	130
Soviet Scientists Verify Biocommunication	131
Sri Lanka Visit	133
APA and the Leonarde Keeler Award	134
<i>Sun Magazine</i>	134
American Society of Dowzers	137
Introduction to the University of Science and Philosophy	137
Enhancement of Human Functioning	138
The Issue of Repeatability	139
Norman Friedman on Consciousness	141
Biocommunication Presentation at Biofeedback Society	142
Presentation at Remote Viewing Conference	142
Unified Science Conference	143
University of Alabama - Birmingham	144
Chapter Nine: Future Biocommunication	
Research	150
Long Range Communication	151
Spiritual Aspects	152
Holistic Health	154
Other Ideas for Continuing Research	155
Future Instrumentation Availability	156
Appendix I	159
Appendix II	162
Index	165

ACKNOWLEDGMENTS

No completed manuscript is ever done alone. I am told that between the original intention to write a book and the finished product there is an obstacle course, and I found this to be true. Accurate storytelling is easy for me, but I dislike and therefore avoid writing perhaps because I insist on proper documentation for every included event. The book began with a simple idea: Let's get my research, the same material I give in my lectures, down in print. My optimistic editor, Franci Prowse, seemed to think this would be a simple project, done in a few months. It became a venture of four and half years during which new facets of the research appeared, each requiring proper sequencing and detail. At various times we consulted other writers and also readers. To them I owe my appreciation as well, especially the ever-faithful, exact, and patient Mary Dolan, and Paul Von Ward, my friend with writing expertise, insight, and enthusiasm.

There were other helpers from the staff of the Backster School of Lie Detection, Tom Gray, Brian and Mary English. I also appreciate the assistance of Steve White and the contributions of Brian Ander-

sen in the lab. All have my gratitude for their support and patience while I've been on my favorite tangent, that of running experiments and reporting on thirty-six years of biocommunication research.

Most of all, my supreme acknowledgment to Mother Nature and her many creations, whose life forms have passed through the lab and revealed for my curious mind their often hidden capabilities.

INTRODUCTION

Before the 2nd of February, 1966, I had never conceived of becoming involved with "bio-communication," the cutting edge of "consciousness research." In retrospect, all the prior choices I had made in education, training, and employment, plus my natural curiosity and a number of chance occurrences, prepared me for what happened on that day and afterwards.

My career, in terms of consciousness research, didn't start with plants. It started when I became fascinated with the subject of hypnosis as a teenager. I was attending Rutgers Prep School in New Brunswick, New Jersey, a boarding school then part of Rutgers University.

One evening a university student seated at the head of our dining table told us about his experience in a university psychology class that day. The class was studying the subject of suggestibility and the professor made an attempt to demonstrate the phenomenon of hypnosis. He had taken a gooseneck lamp and a piece of cardboard, put a small hole through the cardboard and strapped it to the lamp so that all he had was a pinpoint of light showing. A

student volunteer was asked to concentrate on this light as the professor made sleep related suggestions. But it didn't work very well as the student didn't enter any state resembling hypnosis. The professor finally determined the attempt to be a failure.

Later that evening I said to my roommate: "Let's try it, let's see if we can make the thing work." So we flipped a coin to see who was going to be the hypnotist and who the subject. I won the flip to be the hypnotist. We had a gooseneck lamp in our room and did the same thing that had been explained to us. I went through the procedure suggesting, "You're getting sleepier and sleepier, focus on this light," and so on. Amazingly, my roommate went into as deep a hypnotic state as I have ever since witnessed. In retrospect, it occurred to me that I was too good at what I was doing because I then felt at ease telling him, "Now, I want you to open your eyes, but you're not going to wake up. I want you to go down the hall and get permission for late lights." Prep school students weren't allowed to have lights on past ten p.m. without special permission. So my still-hypnotized roommate went down the hall and got permission for late lights which was obtained from the professor who was on duty in the hallway. He signed the late lights log and came back to our room.

I then asked him to sit down and said, "Okay, now you're going to close your eyes and again carefully listen to my voice." A little bit later I said, "Now you're going to awaken. I will count in reverse from five, and when I reach number one, you will be wide awake and feel perfectly fine." After I did the reverse count, he opened his eyes and said, "See? It doesn't work. This so-called hypnosis is a bunch of baloney." He was incredulous when I explained to him what I'd caused him to do. He even denied to the on-duty professor that he had requested permission for late lights. I knew then that something important was going on that deserved further study.

This was the first of several successful experiences that suggested to me the power of hypnosis. I quickly realized that the implications were profound. In the library at Rutgers University, I found several books on the subject that further impressed me, by authors such as George Estabrooks and Milton Erickson. This was before the explosion of interest in this subject and the many books that exist today with so many medical people and psychologists publishing their writings on hypnosis and related fields. Following that year at Rutgers Prep, I spent the equivalent of my senior high school year at Franklin and Marshall Academy in Lancaster, Pennsylvania. There I continued my work with hypnosis and was asked to demonstrate induction techniques before the school's science club.

After my graduation at Franklin and Marshall Academy I decided to start my college education at Texas University. That trip from Bronx, New York to Austin, Texas was an interesting highlight for me. I used the train fare money my parents had given me as a down payment on an Indian Scout motorcycle. I learned quickly how to ride the motorcycle, and with a good map I very much enjoyed the long trip. With some part-time campus employment I was able to complete the motorcycle payments.

I had intended to major in civil engineering, but toward the end of my first semester the December 7, 1941 attack on Pearl Harbor occurred. This influenced my decision to transfer to Texas A & M, which at the time, through its Army Reserve Officer Training Program, was all military. As a greenhorn from New Jersey my selection of a Cavalry R.O.T.C. unit provided additional challenges. I changed my intended major first to agriculture and later to psychology.

At Texas A & M, I renewed my work with hypnosis on a larger scale. Through frequent campus demonstrations my audiences became somewhat pre-conditioned and needed merely to be told that I was

about to make three passes with my hand and each of them would go into a deep sleep. About a third of the audience would go into some stage of hypnosis, a number of them quite deeply. The deeper subjects were used for the demonstrations that followed. My activity with hypnosis wasn't objected to by anyone.

In fact, it fascinated many, including my psychology professor who let me give demonstrations in his psychology classes during portions of a course related to altered states of consciousness.

Included in my demonstrations were examples of post-hypnotic suggestion. In one demonstration, I suggested to a subject under deep hypnosis that when he woke up he would not be able to see me.

Actually I remained in the room. I had told him, "You are not going to be able to see me, because I will be out of the room for thirty minutes." The subject awoke and asked where I was. Although not a smoker, I picked up an available lit cigarette. The subject could see only the levitating cigarette and the smoke appearing as I exhaled. It was so powerful that this now awakened subject got panicky and wanted to get out of the room. When the thirty minutes were up. I re-appeared to him even though I had never left the room. The capability of altering human consciousness to allow a person to experience post-hypnotic negative or positive hallucinations impressed me deeply.

At the end of my first semester at Texas A & M I took the summer off and in September of 1942 I decided to ride my motorcycle from College Station, Texas, to California on a five-day trip. I ended up visiting Long Beach, Huntington Beach, Los Angeles and Hollywood. That was when I met Don Joslin who was in the Navy, then stationed in California. Don came from a family with a Theosophical orientation, the Theosophical Society researches, examines and publishes findings on all sorts of religious and mystical traditions, both ancient and modern.

This was my first exposure to Eastern Philosophy.

Don was several years older than me and was about to be sent overseas. We got to talking about my experience with hypnosis and his understanding of the Theosophical teachings. We talked round the clock for two days exchanging ideas about altered states of consciousness and spiritual concepts.

These discussions made me realize that possibly something much more profound than mere suggestibility was involved in various religious belief systems. Don Joslin introduced me to Eastern ideas such as the notion of survival after bodily death and reincarnation. It wasn't until afterwards, when I first attached a plant to a polygraph on February 2, 1966, that I really was convinced that there was more going on than that presented within the limited scope of scientific proofs. This brought back into focus many of those earlier discussions. I don't know if Don Joslin made it through the war, but I'm glad we met as he surely nudged me into deeper areas of philosophical exploration. My time with him in California made me even more aware of the ongoing war. Also, my approaching nineteenth birthday and my active home-town draft board guaranteed a change in the continuity of my formal education.

I registered for my second semester at Texas A & M but left before its completion to go into the U.S. Navy. In boot camp, they screened three hundred people out of around thirty thousand to eventually go to a ninety-day midshipman school. I was one of those selected, but first they sent me for three semesters to Middlebury College in Vermont, then taken over by the government as part of the U.S.

Navy V-12 program. I was allowed to continue my academic major in psychology.

After becoming a commissioned officer, following completion of the wartime ninety-day U.S. Navy midshipman school at Northwestern University, near Chicago, I was sent to an advanced line officer's school in Miami, Florida and an anti-subma-

rine warfare school in San Diego, California. I finally caught up with the war in the West Pacific. Although I had a strong desire to become involved with the Office of Naval Intelligence and pursue my interest in the possible wartime uses of hypnosis, no one in an appropriate position of authority was interested in listening to such ideas from a twenty-one year old junior grade officer. These ideas would not be taken seriously by military or civilian Intelligence groups until two years later.

The end of the war in the Pacific found my ship in Okinawa, staging for the pending invasion of Japan. I was later discharged from the Navy on July 4, 1946, still not having an occasion to pursue my interest in the use of hypnosis in national security related endeavors.

During the eight months after I returned to civilian life I found an outlet for my interest in physical fitness by equipping and managing a small weight lifting gym in Long Beach, California. I disposed of that business when an opportunity presented itself for me to enlist directly into the U. S. Army Counter-Intelligence Corps (CIC). I was awarded a Regular Army Master Sergeant's rate based upon my Ensign's commission in the U.S. Navy. After successfully completing a nine-weeks basic course and a two-week instructor training course at CIC headquarters, then located at Fort Holabird near Baltimore, I was retained at the school as an "Instructor of Investigative Subjects." In addition to instructing interrogation classes for trainee agents, I lectured on hypnosis, my area of special interest, to members of the CIC staff and also to State Department and military attaché groups attending courses conducted at that center. That special area of interest dealt with the potential danger of hypnosis being used by foreign powers to extract classified information from our government's overseas personnel.

Although my presentations continued to stimulate ongoing interest, I believe I brought my demon-



Author in 1945

strations of the power of hypnosis to a peak when one evening I hypnotized the secretary of the Commanding General of the Counter-Intelligence Corps and had her remove a highly classified document from his locked files. After awakening from the hypnotic session she had no memory of the incident, nor did I inform her of what she had done. That night I secured the document in my locked file and the next day presented it to the General. I explained to him that I might be risking a court martial, but hoped instead to expedite further consideration of the importance of my research. Rather than a court martial, on December 17, 1947, I received a very favorable letter of recommendation from the General, stating that my research was "of high importance to military intelligence." Then positive things started to happen.

In February of 1948, I was given temporary duty orders to report to the Walter Reed Hospital near Washington, D.C., for a ten-day period. My activities included lectures and demonstrations of hypnotic induction techniques and a more effective use of so-called truth serum such as sodium pentothal. My visit occurred at an interesting period in the history of the medical use of hypnosis, as most medical doctors at that time did not believe that the phenomenon was real. The ten-day period was successfully concluded with assurance from the head Walter Reed psychiatrist that a very favorable report would be submitted to the CIC on my behalf.

After a number of meetings with interested groups in Washington, D.C., my Regular Army four-year enlistment was terminated after only thirteen months. I was discharged from the Army on April 26, 1948 and awarded a U.S. Army Reserve Commission as a first lieutenant, Military Intelligence, that same day. As a civilian, I reported for work at the Central Intelligence Agency in Washington, D.C. the following day. I had passed the rather thorough background check conducted by CIA, except they

did tell me that it was not exactly proper for me to have joined the U. S. Army while still enlisted in the U.S. Navy Reserve.

Shortly after starting work at the CIA, it occurred to me that I could make use of the polygraph in seeking to understand the potential security risk of unfriendly factions who might make use of hypnosis and the so-called truth serum against the United States' interest. I was allowed to make a series of trips to Chicago to receive specialized training from Leonarde Keeler, a pioneer in the use of the polygraph.

In addition to other classified activities, I was a key member of a CIA team that was prepared to travel to any foreign location to analyze the possible use of unusual interrogation tactics, including my original areas of concern, mainly hypno-interrogation and narco-interrogation. As the Soviet Union escalated the "cold war" to a more feverish pitch, the team traveled in 1949 to Berlin and Vienna during the notorious Soviet blockade. The following year, during the Korean conflict, the team visited Sasabo, Japan, as Chinese communists entered the conflict and U.N. forces were evacuating casualties from a Pusan, Korea beach head just a short distance away.

Back in Washington, D.C., the polygraph operation I had established was becoming popular for the screening of applicants for employment at the CIA and for some general screening of key CIA personnel. The ever-increasing schedule of rather routine polygraph examinations started to interfere with my more creative interests in research.

Shortly after the death of Leonarde Keeler I left the CIA to serve as director of the Keeler Polygraph Institute in Chicago. At that time this was the only available classroom type school teaching the use of the polygraph. As director of that school, my first two six-week basic classes were composed primarily of U. S. Army personnel. This was prior to the start of their own polygraph course at the U. S.

Army Military Police school, then located at Fort Gordon, Georgia.

A short time later I moved back to Washington, D.C. and established a commercial polygraph consultant business working primarily with several government agencies. It was during this period that a polygraph examiner working with me was attending a Washington, D.C. area aviation flight school. His exploits intrigued me and I also took up flying, receiving my private pilot's certification during December 1951. I also purchased a small J-3 Piper Cub.

My private polygraph work expanded to a second office in Baltimore, MD. and finally in 1959, a complete move to New York City. Prior to my founding the Backster Research Foundation, Inc. in 1965,¹ I was chairman of the Research and Instrument Committee of the Academy for Scientific Interrogation, a post to which I had previously been reappointed for eight consecutive years. During my intensified polygraph research activity which started in 1958, I consolidated, refined and expanded upon the then existing polygraph techniques. This effort resulted in the development of the Backster Zone Comparison Technique and the first system for the numerical evaluation of polygraph charts. The technique involved the polygraph examiner's understanding and utilization of subtle shifts in consciousness or "psychological set" of the person being tested.

In 1959 the principal competitor to my New York City commercial polygraph business, Richard O. Arther, and I decided to combine forces and to start our own school. We offered a six-week course teaching the use of the polygraph, with me serving as the school director. We emphasized different approaches in the application of the polygraph technique. This combined effort continued until 1962 when we dissolved our partnership and set up separate schools.

In February, 1966 an event occurred that was



Author and Dracaena Plant

PRIMARY PERCEPTION

about to expand the entire focus of my research through a kind of "paradigm shift" in my own awareness. At the time of its occurrence I had been involved in the use of the polygraph on humans for eighteen years. I have been autobiographical in this introduction to allow the reader to better understand my initial and subsequent reactions to that event. They appear to have been heavily influenced by my earlier experiences. How I next utilized the polygraph and other instrumentation to follow up on that initial insight is best explained in the chapters that follow.

Cleve Backster, San Diego, California

NOTES

1. The Backster Research Foundation, a State of New York corporation, was established in 1965 primarily for the purpose of conducting research related to the advancement of polygraph (lie detection) technique and the improvement of polygraph instrumentation. In 1966 the research emphasis expanded to include biocommunication research. In 1969 a 501(c)3 non-profit status as a "scientific and educational" foundation was granted. Although Backster Research Foundation has been primarily self-funded, during its early history significant funding was received from the late Evelyn C.

Leonard. From 1992 through 1996 modest funding was received from the Highland Supply Corporation through the kindness of its president, Donald B. Weder. It should be noted that all of my share of the profit derived through the sale of this book is being donated to the Backster Research Foundation to help fund future research.

CHAPTER ONE

The Famous Dracaena Plant

This is my first occasion to personally publish a more detailed account of my experience with the dracaena plant that catapulted my research in a new direction thirty-six years ago.

It began in New York City in 1966. I worked a lot of times during the night because I distract easily. and I found that in those hours I could keep my mind more focused than I could in the turmoil of the average daytime activity. During those evening hours, other than my Doberman Pinscher, Pete. sleeping in the back room, the only apparent signs of life in the lab were two potted plants. My secretary had purchased them from the plant store on the ground floor of the eighteen-story building on Times Square in which my lab was located.

Because they were going out of business, the plant store owners were selling potted plants for about two dollars apiece. So she got a rubber plant and a dracaena, just so we'd have something green around the lab. I could not have been accused of being eccentric about plants, because I don't recall owning even one plant prior to that occasion.

HOW IT ALL STARTED

My whole fascinating experience started on February 2, 1966 around seven o'clock in the morning when I was taking a coffee break after working in the polygraph lab all night. While watering the two lab plants, I wondered if it would be possible to measure the rate at which water rose in one of the plants from the root area into the leaf. I was particularly curious about the dracaena plant because of its long trunk and long leaves. Because of the polygraph examiner school I directed, there were plenty of polygraphs on hand. The polygraph records apparent electrical resistance changes in the skin. That's the "wheatstone bridge," or galvanic skin response (GSR) section of the polygraph. The GSR polygraph component is based upon resistance indicating circuitry, such as that used in an electrician's OHM meter. A small amount of electricity is passed through electrode plates, one attached to each of two fingers of the human subject.

With human subjects, the polygraph also includes two other monitoring functions: One records relative changes in blood pressure and also changes in the pulse strength and rate. The third component records changes in respiration. I decided to attach the sensors for the polygraph's resistance recording section toward the very end of one of the dracaena's long leaves. I did this by placing the leaf between the two sensor electrodes and encircling the sandwiched leaf with a rubber band. The relative decrease in the leaf's electrical resistance—due to the expected increase in its moisture content—should be indicated by an upward trending of the ink tracing on the polygraph chart recording. The



Figure 1A - Historic
Dracaena Plant in 1966

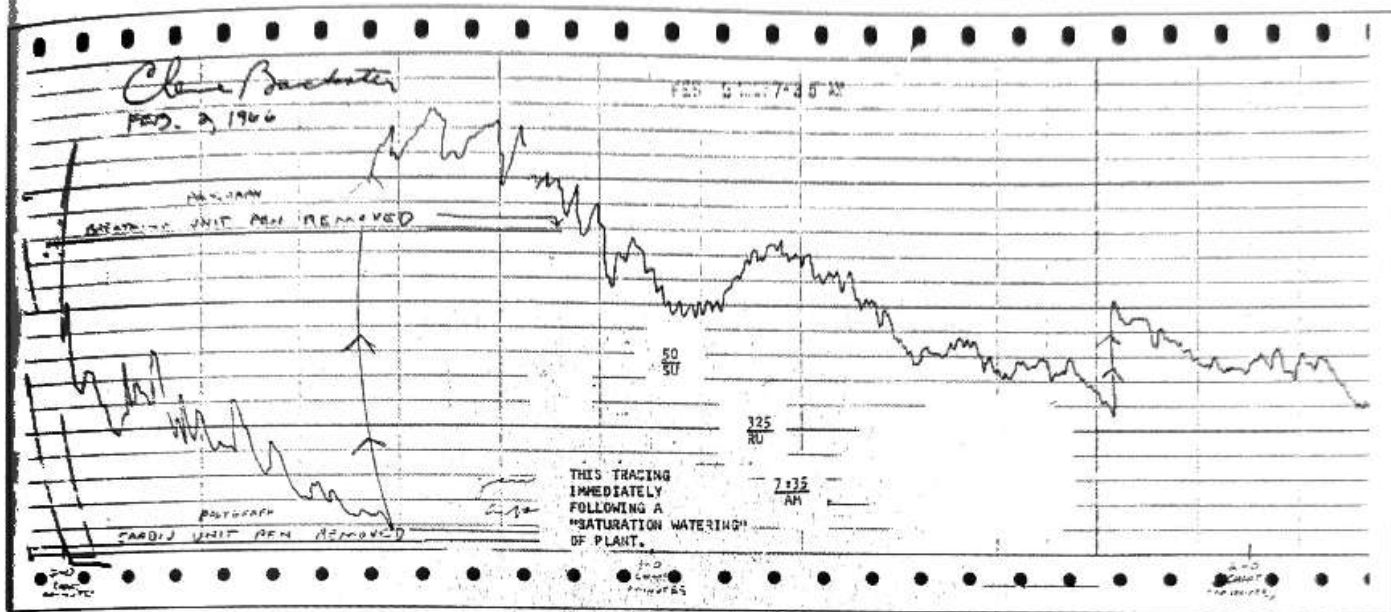


Figure 1B – First Two Chart Minutes

plant leaf resistance fortunately fell within the 250,000 OHMS instrumentation range, and remained balanced within the GSR circuitry for the 56 minutes that followed. Rather than showing the expected decrease in the plant leaf's electrical resistance due to the arrival of additional moisture between the electrodes, the initial portion of the tracing displayed increasing resistance by trending downward. This was the opposite of what I expected. But then, about one minute into the chart recording, the tracing exhibited a short term change in contour similar to a reaction pattern typical of a human subject who might have been briefly experiencing the fear of detection (*fig. 1B*). So I thought, "well, if this plant wants to show me some people-like reactions, I've got to use some people-like rules on it and see if I can get this to happen again."

I quickly learned that with plants, because of the waxy insulation between its cells, you get an electrical discharge that comes right up into the electrodes and gives you the serrated edge you see on the left hand GSR tracing in figure 1C. With human tracings, as shown in the right hand figure, this does not happen.

An example of what we do with a human taking a polygraph test is ask a question such as, "Did you

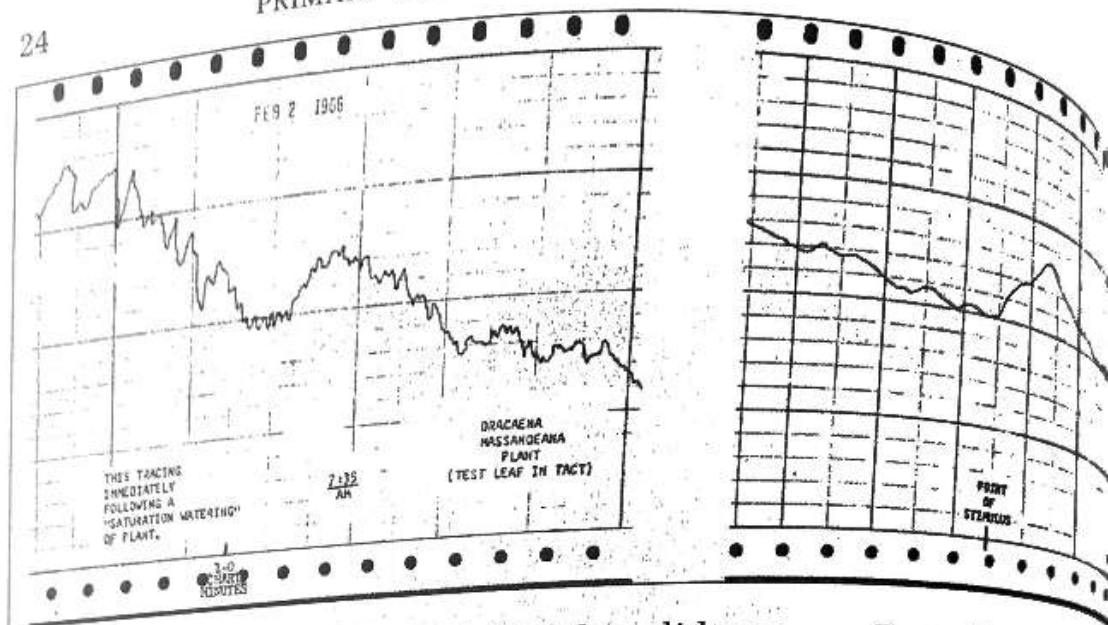


Figure 1C - Comparison
Contours of Plant and
Human Tracings

fire that shot fatal to John Smith?" If they did commit the crime, that question threatens their well-being and produces a reaction that shows up on the chart. I decided to figure out how I could threaten the well-being of the plant. I wasn't into talking to plants, not at that time. So as a substitute threat, I immersed the end of a leaf, that was neighboring the electroded leaf, into a cup of hot coffee. There was no noticeable chart reaction, and there was a continuing downward tracing trend. With a human, this downward trend would indicate fatigue or boredom. Then, after about fourteen minutes of elapsed chart time, I had this thought: As the ultimate plant threat, I would get a match and burn the plant's electroded leaf.

At that time, the plant was about fifteen feet away from where I was standing and the polygraph equipment was about five feet away. The only new thing that occurred was this thought. It was early in the morning and no other person was in the laboratory. My thought and intent was: "I'm going to burn that leaf!" The very moment the imagery of burning that leaf entered my mind, the polygraph recording pen moved rapidly to the top of the chart! No words were spoken, no touching the plant, no lighting of matches, just my clear intention to burn the leaf. The plant recording showed dramatic excitation. To me this was a powerful, high-quality observation (fig. 1D).

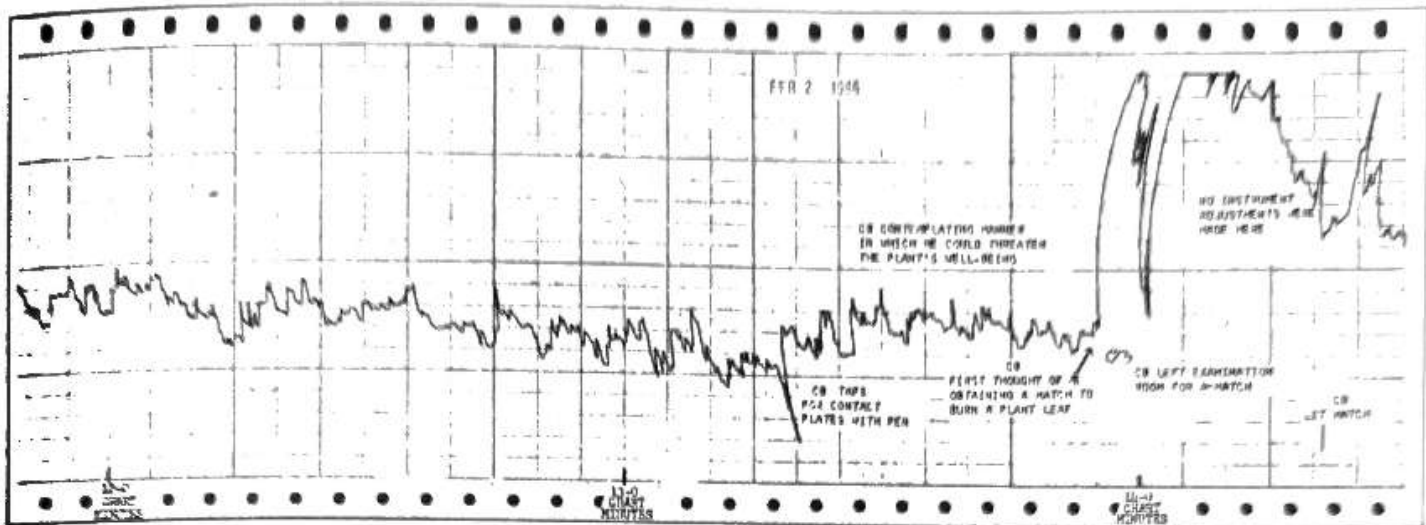
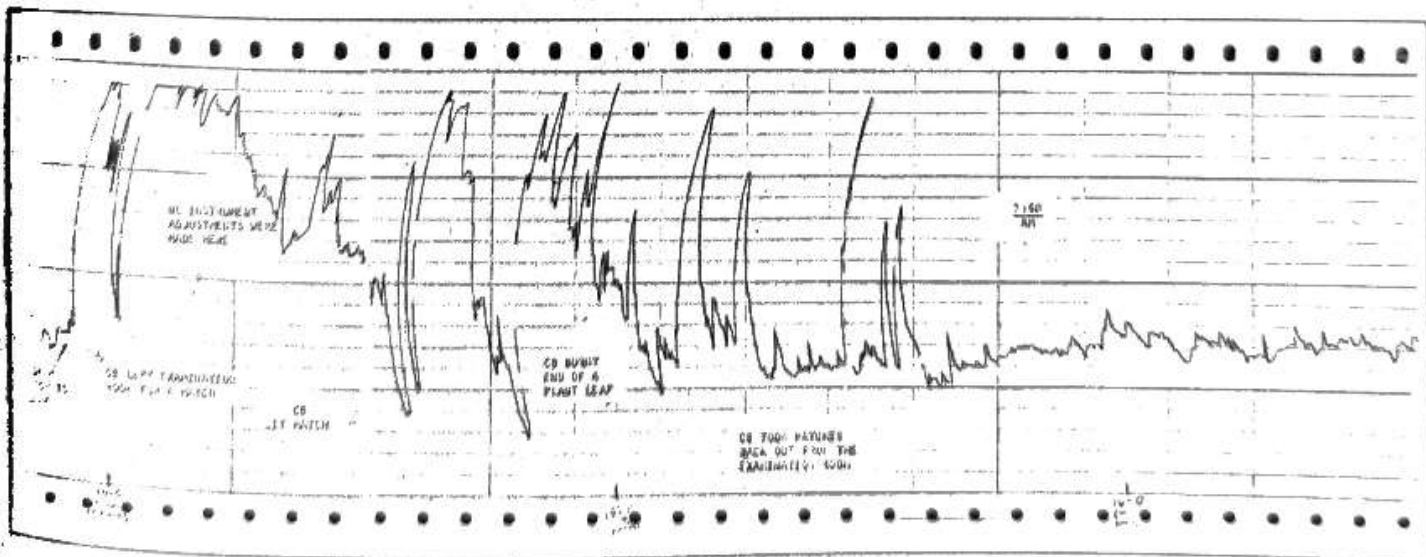


Figure 1D - Plant Reaction
at Imaged Intent to Burn
Leaf

I must state that, on February 2, 1966 at 13 minutes, 55 seconds into that chart recording, my whole consciousness changed. I then thought, "Gee, it's as though this plant read my mind!" I left the room and went to my secretary's desk to get some matches, as she smoked. When I returned the plant was still showing highly visible reactions. I then reconsidered burning the electroded leaf, as I probably would not be able to recognize any additional tracing changes. Instead, I made a feeble pass at another leaf with a lighted match, but by then I was not really into harming the plant. I thought the best thing for me to do was to remove the threat, and see if the plant would calm down. After returning the matches to my secretary's desk, the tracing returned to the calmness displayed prior to the original decision to burn the electroded leaf (fig. 1E).

Figure 1E - Longer Chart
Overview



THE NEXT STEP

Now, I'll talk a bit about what happened later that same morning. One thing, of course, that you can be assured did not happen: This was still before 8:00 a.m. in the Times Square Area of New York City, and I certainly didn't want to go out into the street yelling, "My plant just read my mind!" Besides, that would have seemed strange even for New York City's Times Square and also would have gone against my training as a person who had been involved with science for some time.

When my associate, Bob Henson,² came to work at about 9 a.m. I had this twenty-eight-foot-long chart, produced during the 56 minutes of plant recording, taped to the wall of the lab hallway. As he entered the polygraph examination room, he asked me who I had been testing. I said, "Bob, just reach out from where you are now standing and you can touch what I was testing." He was standing right next to the dracaena cane plant. I had taken the electrodes off the plant leaf, but later on I encouraged him to reattach the same plant leaf so that he might see how the polygraph's GSR type tracing appeared to show attunement with the environment. When he threatened the plant, he got similar results, although I would not let him carry through with any action that would harm the plant.

I still have this historic dracaena plant, and it's grown awfully big, (*fig. 1F*) During my frequent lec-



Figure 1F - Dracaena Plant
in 2002

tures on biocommunication I speak about it and show its picture. I suspect it grows at least another inch after each of these occasions. I have wondered if it's got the plant equivalent of an ego problem.

NOTES

1. It is interesting to note that in 1865, fifty-nine years before I was born, my grandfather, J. Frank Backster, established Backster's nurseries in Lafayette, New Jersey. That business is no longer operated by the Backster family.

2. In 1961, Bob Henson, while with the U.S. Coast Guard Intelligence, graduated from the polygraph examiner school I directed. After leaving the Coast Guard he accepted employment with Backster Associates Inc. and moved his family to the New York City area. Over the years the Hensons, in effect, became my adopted family. Bob was not only a valued and loyal employee, but became a full business partner. Bob was a member of the Backster Research Foundation's board of directors and participated in biocommunication research projects. Following his death in 1993, Bob's wife, Mary Ann Henson, until her death in November of 2002, continued to serve as Backster Associates' executive secretary and the Backster School of Lie Detection registrar.

CHAPTER TWO

Early Observations

Starting on February 2, 1966, I went through a period of about two and a half years observing the galvanic skin response type tracings of plants using a more refined method of electroding a leaf (*fig. 2A*).

I first used a logical approach. I tried different kinds of plants, different polygraph instrumentation, and doing similar plant testing at other locations, one nearly half-way around the world. On a June, 1968 trip to Lebanon, prior to a serious escala-

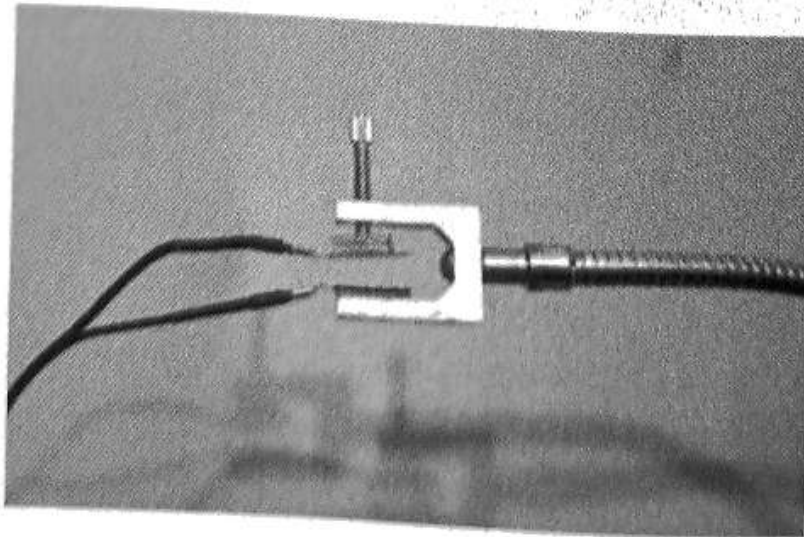


Figure 2A - Plant Electrode Configuration

tion of the Middle East tension, plants there reacted for me in a manner similar to that of the plants in New York City.

NEED FOR CLEAR INTENTION

An interesting point noted during this period, regarding threats to the plant's well-being, was that there had to be real intent to do something harmful in order to observe a chart reaction. If you merely pretended, you would not cause a reaction. The plants seemed to know when you didn't mean it. They appeared to pick up the difference between your pretense and your true intent.

It needs to be emphasized that this work with plants, using the GSR component of the polygraph, has no direct relationship with lie detection. If a person is attempting deception during a polygraph examination, there are short term changes in the blood pressure, pulse rate, and pulse strength. Also, there are changes in the respiratory pattern and in the traditional GSR reading. These changes require sensors to be physically attached to the person being tested. I do certainly concede that emotion has a lot to do with the conduct and analysis of a well-structured polygraph test. Unfortunately, we polygraph examiners cannot identify one emotion from another merely by looking at the chart tracings. With humans who are attempting deception, an important part of the overall polygraph examination procedure is to isolate the emotion of fear, and within that emotion, further isolate the fear of the detection of that deception.

It is interesting to note that emotions were attributed to plants through research in India conducted by Jagadis Chandra Bose.¹ With plants, aside from reflecting a possible equivalent of their own emotions, my research is unique from that of Bose in that it indicates that plants appear to be a sensi-

tive indicator of the emotions emanating from other life forms in the immediate area, particularly the emotions of humans.

PLANT TERRITORIALITY

An important problem during this period of preliminary plant observations was that of trying to properly structure the research environment. Day-time human activities in or near my lab location were extensive, making it difficult to sort out significant plant reactions and identify their cause. This was particularly true in New York City. I had to wait until the building was fairly empty, often working from the early evening to about 6:00 or 7:00 in the morning. My lab was then in the middle of Times Square, 46th Street and 7th Avenue, on the fourth floor of the building. Even during these evening hours it could often be chaotic outside, but in the lab it was not. The plants would still show stable readings.

This brings up the concept of plant territoriality. If you try to think of a plant being able to pick up your activity, let's say at the other end of the seventy- to seventy-five-foot laboratory, you would think that it should be able to pick up activity from the street. Like the animal behavior described in Ardrey's book, *The Territorial Imperative*,² animals apparently are able to contain their receptivity within the territory they have somehow staked out as being their space. Plants also seem to have this capability.

For example, a plant has now been brought into a new environment. In a period of time, it appears to become attuned to activities of animal life forms in the various inter-connected space or rooms. Within the animal life-form classification I also include people who have access to the plant. The safety of the plant seems to relate to its accessibility. For

instance, in the next office suite, unconnected to the lab, there could be human activity only twenty feet away from where the plant is, and yet, with rare exceptions, the plant would not sense the activity in that unrelated space. But fifty or sixty feet away within the same interconnected lab space, the plant would be attuned and react to a variety of stimuli.

PLANT-CARETAKER ATTUNEMENT

The other fascinating attunement that I found with plants was that they appeared to have an affinity to the person who takes care of them. Now this doesn't have to be any kind of mushy two-way affair. With a person who has a plant that they have watered, even though it is pretty routine without any noticeable human emotions involved, there is an apparent bond.

During plant monitoring sessions, when I left the lab to run an errand, I found that the moment I decided to return to where that plant was, the plant often showed a fairly significant reaction, especially when my decision to return was made in a spontaneous manner. How did I become aware of this? It involved the use of a stop watch and a time transfer to the chart recording in the lab, for instance, when I realized I had forgotten something and made a quick decision to go immediately back to the lab. It wouldn't work as well if I merely thought that I really should go back, but delayed my return.

So the plant's attunement to those actually in the lab and a familiar individual at a remote location, but not to activities in the locations in between, causes one to suspect that the mode of communication does not follow concepts ordinarily attributed to the electromagnetic spectrum. Early on I began to suspect that a kind of perception was being demonstrated that likely was more basic or

more primary than our traditional views on perception. This led to my use of the term "Primary Perception."

PLANT ATTUNED TO HUMAN TRAVEL

Once during this early phase of plant observations my associate, Bob Henson, was about to experience a wedding anniversary and his wife, Mary Ann, wanted my collaboration for a surprise party in Clifton, New Jersey. He was a Scorpio and I had been told that it's difficult to hide things from them, so I figured out how to pull this off: I'd get him to collaborate on another plant experiment involving possible lab plant changes as he and I made the trip from New York City to Clifton. The electroded plant should be attuned to both Bob and myself. On this occasion we kept careful research notes as our trip to Clifton progressed. Aside from accomplishing the original surprise party mission, it turned out to be a rather successful experiment. Later that night, when I returned to the lab to compare the plant response times with the notes we had taken, there were noticeable changes in reaction patterns at various stages of our trip: When we walked the underground approach from Times Square to the Port Authority Terminal at 40th Street and 8th Avenue; when we boarded the bus for Clifton; when the bus entered the Lincoln Tunnel traveling from Manhattan to New Jersey, and during the remaining trip to Clifton. Mary Ann had set the party preparations at a neighbor's house in Clifton so as to keep the secret, and it worked. As we approached the house, everyone yelled "Surprise! Happy Anniversary!" Upon checking the chart recording back in the New York City lab, there was a big reaction from the plant at that exact time.

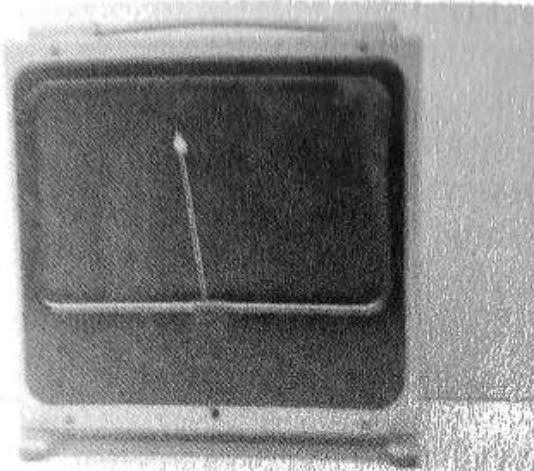


Figure 2B - Plant Reaction
Meter

During these early months of observation, I would often let the polygraph attached to a plant run an accumulation of hours. Because of the cost of chart paper, that became too expensive. I would at times use a large meter or a tone generator, rather than an ink tracing, to be alerted when the plant appeared to sense something. A plant reaction on the meter would be indicated when the top tip of the meter's five inch long needle surged clockwise and then returned to the its starting position (*fig. 2B*). If this occurred I would attempt to account for its activity by noting what was happening in the lab environment at that time.

On the occasions that I attached a tone generator, a reaction would be indicated when the tone went upwards and quickly recovered downward. The tone generator allowed me to get some other work done without having to stand around keeping the meter in view. This also allowed the events causing the reactions to be more spontaneous.

ATTUNEMENT TO NON-HUMAN LIFE FORMS

I found that the plants were very sensitive to the death of a wide variety of microscopic life-forms. For example, when we'd make coffee in the lab, we would ordinarily boil a tea kettle of water and pour it in the top of the dripolator type coffee pot. After using the amount of water needed, we would set the tea kettle back on the turned-off hot plate and forget about it. One day, I needed the tea kettle for something else, and I poured the leftover scalding water down the sink. The plant then being monitored showed intense reactions when the hot water hit the

drain. I wasn't doing or planning anything research related. It was truly a spontaneous event.

It should be noted that for several months prior to this, we had not poured hot water down the drain, nor had we used chemicals to clean the sink. I suspected that the hot water was killing the life forms growing in that drain, and the plants reacted at that exact time. It appeared that the bacteria, being terminated by the boiling water were emitting some type of signal, which was picked up as a potential threat by the plant being monitored.

This was confirmed several months later when I took samples out of the sink drain and inspected them under a microscope. There turned out to be a jungle of life-forms present, somewhat similar in appearance to the cantina scene from "Star Wars," all kinds of bizarre life forms.

TERMINATION — THE ULTIMATE THREAT

The following was one of many careful observations that seemed to fit a pattern. When other life forms were being injured, the plant apparently perceived its well being as threatened. Even though I ordinarily did my research at night when the building was empty, during the day visitors would come to view demonstrations of electroded plant activity. That's when I noticed the plants sometimes appeared to react to what was going on in the space next to our laboratory, an exception to the territorial aspects previously mentioned. The lab was located on the fourth floor of the eighteen-story building. There were rest-room facilities on each floor; every other floor had a men's room, and alternate floors a women's room. They normally used a very strong drip disinfectant in the urinals in the men's room, which happened to be located up against the other side of the lab wall from where the plant activity

was being observed. On frequent occasions I would be demonstrating plant recordings to a daytime visitor and would be observing a calm tracing. Then for no obvious reason the tracing would go right off the top of the chart. At that same time I would hear the flush of a urinal, indicating that someone had just used the facility. This allowed me to make an association of the two events.

At first I was thinking, we can't have that much human emotional interaction if only one person was in the bathroom, so there must be an alternate explanation. I had adjusted to the idea that human emotional stimulation seemed to be picked up by plants. I found out later that there are some living cells in body fluids being excreted and that when these cells hit the air and the disinfectant in the urinal, they were being terminated. This kind of termination caused explosive reactions on the plant recordings.

It was interesting to note that with harm to most every other non-human life form that had served as a remote stimulus, the plant eventually appeared to adapt after three or four repetitions. This was exciting because it implied some form of memory, as the plant would no longer react to the same type of stimulus, not just that day but for days afterwards. But with human cell destruction, such as excretions hitting the disinfectant, the same plant continued to react with equal intensity to similar events during the days that followed. There is more on this in chapter 7.

A VISIT TO THE C. H. STOELTING COMPANY

During the two months following the initial plant observation I became increasingly curious as to why I was able to use the GSR instrument component designed for the traditional polygraph to successfully monitor plant reactions. To explore

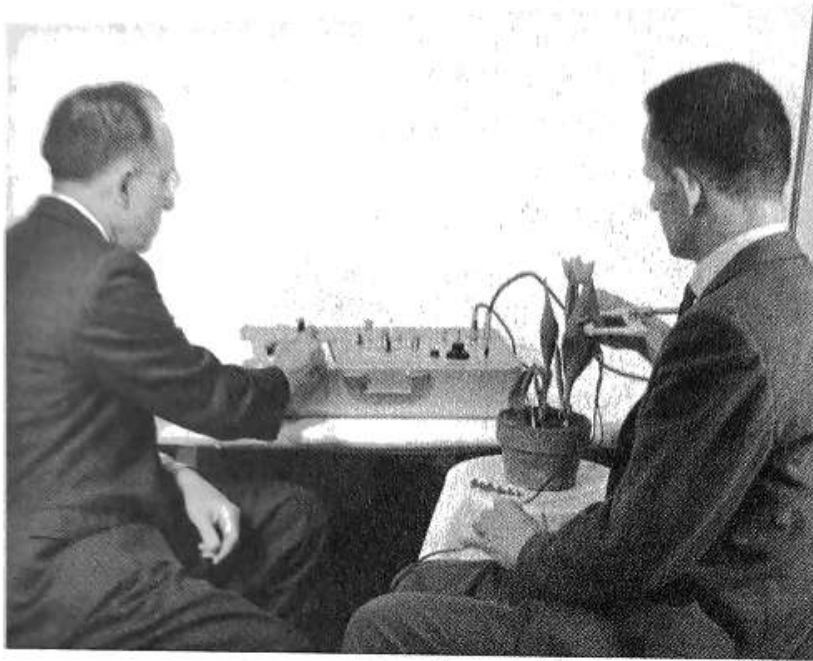


Figure 2C – Electroding Plant with J. J. Heger, Sr.

this matter, in April of 1966, I made a special trip to Chicago to visit the C. H. Stoelting Co., manufacturers of the polygraph instrumentation I had used. I demonstrated plant reactions to the president of the company, J. J. Heger, Sr., their technical person, Donald Klipstein, and J. J. Heger, Jr., a graduate from a polygraph examiner class I had directed (*fig. 2C*).

When I later talked to Donald Klipstein in the research area of the Stoelting Company, he suggested that we do further exploration using their oscilloscope system, capable of high-powered magnification of subtle electrical discharges. For a preliminary observation, we attached an oscilloscope electrode to each side of an orange, and placed the orange on the floor. We observed signals originating in the orange. This was my first exposure to that kind of signal magnification equipment. With the standard GSR equipment a small electrical current is passed through the electrodes and the system is designed to indicate resistance changes. The oscilloscope we were then using acted as a sensitive voltmeter and did not pass electricity through its electrodes. It merely magnified electrical activity, on this occasion originating within the orange. To attempt to create a stimulus, we took an exacto

knife, used in drafting, and dropped the exacto knife toward the orange from a height of several feet. Looking at the oscilloscope, we could see that the signal from the orange spiked while the knife was on its way down, before it actually hit. More interesting, if we dropped the knife with the intention of missing the orange, there was no signal during its descent.

MY ATTEMPT TO FOLLOW SCIENTIFIC METHODOLOGY

My approach to the further pursuit of primary perception really needed to be a responsible one, because I had a reputation in the polygraph field as director of one of the leading polygraph schools in the country. Also, I was still the chairman of the Research and Instrumentation committee of the Academy for Scientific Interrogation. Aside from the polygraph profession, I knew that I had to approach this cautiously. I used what I call the "gee whiz" approach with the many scientists I contacted. Among those I invited to my lab were physicists, chemists, biologists, psychiatrists, and psychologists. They did not usually encounter each other in my lab; it was just the two of us, so there was no need for posturing or defensive stances. As I gained their confidence and they knew I wasn't name-dropping or using their visit for self-promotion, good rapport was usually established easily. All I would say to them was, "Golly, Dr. So-and-so, can you help me with this? I'm getting all these strange happenings on the chart. Can you tell me what is going on here?" It was a very low-key approach and they would go through their discipline-oriented check list of different things they thought might provide an explanation. They would try to see if I had taken proper precautions such as shielding and circuit grounding. The physicist, par-

ticularly, had an impressive list of considerations which I really appreciated. I was anxious to see if they could explain the plant phenomenon I was observing through some conventional aspect of their specialized body of scientific knowledge. If they could, then I did not want to make a big fuss over something that was already pretty well established.

I was also privileged to exchange visits with botanists at Columbia University and Rockefeller University. But, as it turned out, with a rather wide representation of different scientific disciplines, a traditional explanation just did not surface. Also, as these people would visit, I would ask them, "If I were to structure an experiment that would make some impact as far as your discipline was concerned, what controls would you suggest be included in the experiment?" I found their suggestions quite helpful.

VISITATIONS

One of my preliminary explorations led me to Old Lyme, Connecticut, to meet Dr. Harold Saxton Burr. This was a man of renown who had been a professor of anatomy at Yale University School of Medicine. At the time I met him, in May of 1966, he had been monitoring the electrical properties of a tree in his back yard, having done a continuous chart recording of the electrical activity of that same tree for ten years. The results were startling. Among other observations, he was able to draw a link between the tree's electrical changes and sun spot activity.

For nearly forty years Professor Burr and his colleagues at Yale had confirmed that all living things have electrodynamic fields that can be measured and mapped with a fine voltmeter. His research was later described in his book, *Blueprint for Immortality*.³ When I shared with Professor Burr my inten-

tion to first publish and then to continue to bring my plant research to the attention of the scientific community, his comment was, "You've got your hands full, but good luck!" If scientists had then been more receptive to work such as that of Saxton Burr, I am sure my current research results would not have come to some as such a surprise.

On May 13, 1966 I went to Durham N.C. to visit J. B. and Louisa Rhine, who at that time were the leading names in the field of parapsychology. His reception was initially very enthusiastic, until he discovered I would not be persuaded to move down there and join his staff. But I did return from my trip with some additional ideas on how to proceed with my research and perhaps a bit wiser regarding the politics of handling new discoveries.

ADDITIONAL PLANT OBSERVATIONS

When I returned to my New York City lab, I decided that I must continue to be very careful to follow the principles outlined by the "scientific method." I needed to be sure that I had conducted a successful experiment with plenty of controls before I even talked openly to the public or the popular-type press.

I thought it would be best to carefully time-study the plant recordings as they related to spontaneous events in their immediate environment. As I reflect on it, this approach seems to have been consistent with the then current research with dolphins.⁴ Dolphin researchers said, let the dolphins show you, not the other way around. During my early plant observations I didn't try to cause the plants to do anything. With the plant activity being recorded by the GSR-type instrumentation, I'd go about my business in the laboratory. I periodically reviewed the long chart recording and when I

noticed a large reaction, I'd try to figure out what was going on at that time, what transpiring events may have then been occurring in the area.

For a period of six months following my February 2nd initial plant observation, my Doberman Pinscher, Pete, shared the lab and school office space. Lillian, our secretary, was afraid of dogs, so each morning she brought a cookie as a peace offering for Pete. They would get along nicely that day. Of course Pete began to demand his cookie earlier each day which in turn caused Lillian to get a bit nervous. The plants in the lab seemed very attuned to both Pete and Lillian. His expectation of the treat and her nervously given gifts provided some interesting chart reactions from plants being monitored at the time (*fig. 2D*).

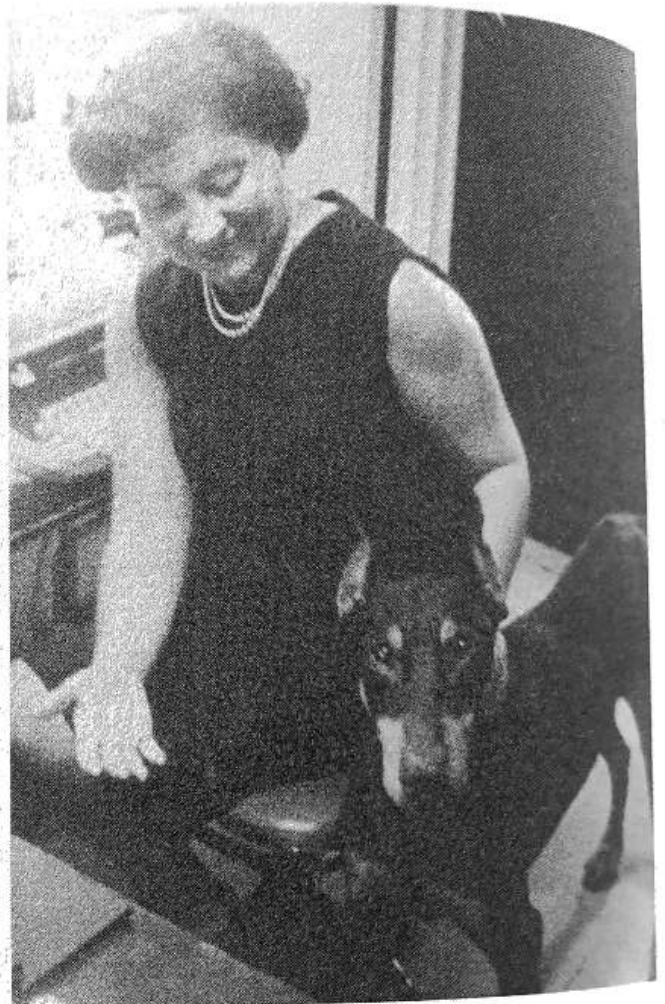


Figure 2D – Pete and Lillian

ATTEMPTS TO SCREEN

At the suggestion of several scientists, and the physicists in particular, I later attempted to shield the smaller electroded plants from electromagnetic interference by using a copper screen cage. This was also done in an attempt to disrupt the biocommunication effect. The plants behaved as if the screen cage enclosure did not exist. Much later I had the opportunity to confirm this by utilizing the state-of-the-art shielded room mentioned in chapter 8.

In an attempt to understand the nature of this communication, it might be best to consider what I then believed the signal was not. I felt certain it was not within the known electromagnetic frequencies, AM, FM, or any form of signal which could be

shielded by ordinary means. Distance seemed to impose no limitation. I made observations that suggested that this signal could traverse dozens, even hundreds of miles. It seemed that the signal may not even fall within the electromagnetic spectrum. If not, this would certainly have profound implications. This will be discussed later in greater detail.

THE POWER OF OBSERVATION

Over a period of a year and a half, it seemed that the plants were indeed very much attuned to other life forms in the laboratory, including non-human activity. Numerous observations continued to confirm such attunement. I found from my observations that plants quite reliably exhibited biocommunication capability.

I also found out something rather basic in this kind of research. If you watch the phenomenon too closely, you may already be affecting it. Once you allow your own consciousness to interact in an observation, or in an experiment, you may already be altering its outcome.

With carefully designed experiments, the only successful way to eliminate interference, as it turned out, was to completely automate the experiment. That was what I set out to do. My next important project was to carefully design an experiment to demonstrate the phenomenon. If successful, I would make every effort to cause the experiment to be published in a science-oriented journal.

NOTES:

1. Jagadis Chandra Bose was one of India's greatest scientists, active in physics and botany during the first half of the twentieth century. Through his invention of sensitive instrumentation, one item called the crescograph, he saw the

boundary lines vanishing between the realms of the living and the non-living. As a tribute to his inventions he was knighted by the British Royals in 1917. He later encountered familiar resistance from prestigious physiologists of his period who advised him to "confine himself to investigations in physics in which his success had been assured, rather than encroach on their preserves." Fortunately, he did not take their advice.

2. Robert Ardrey, *The Territorial Imperative: A Personal Inquiry into the Animal Origins of Property and Nations* (Kodansha Globe, 1997) Philip Turner (Editor) first published (Atheneum, 1966)

3. Harold Saxton Burr, *Blueprint for Immortality, Electric Patterns of Life* (London, Neville Spearman, Ltd. 1972). Paperback edition published as *The Fields of Life* (New York: Ballantine, 1973). Also Edward W. Russell wrote *Design for Destiny* (New York: Ballantine, 1973) describing Professor Burr's research, which tended to confirm that all living things have electrodynamic fields that can be measured with sensitive voltmeters.

4. John C. Lilly, MD, *Man and Dolphin*. (New York: Doubleday, 1961) Also, Bobbie Sandoz, *Listening to Wild Dolphins* (Hawaii: Beyond Words Publishing, 1999).

CHAPTER THREE

The First Published Experiment

I was now faced with a decision concerning the structure of that necessary successful experiment. Initially wanting to involve the interaction of plants to humans in this experiment, I found, after preliminary attempts, that as I tried to structure human emotionality as a planned plant stimulus, I was confronted with several problems. Because humans can have such a complexity of emotional expressions, with no equivalent of an "on-off" switch for the required precise timing, I soon decided that structured human stimuli may not be the way to go.

I wondered what other life form could be used as a stimulus in the experiment without stirring up controversy with the anti-vivisectionist people, particularly if it involved that life form's termination. I decided on brine shrimp, as they were going to soon die, one way or another (*fig. 3A*). Since they were raised as tropical fish food and sold in aquarium supply stores, they already had what some would call "heavy karma." I felt my hurrying their death a bit probably would not stir up excessive criticism.¹

The final structure of the experiment involved the automated termination of brine shrimp. My intention was to see if their death would stimulate a response from the plants located in separate rooms toward the opposite end of the lab.

My fellow researcher for this experiment, Bob Henson, and I had a problem finding healthy brine shrimp. Many that were purchased from the local tropical fish stores seemed sickly, close to death, and were found to be unreliable for eliciting a response from plants. Our answer to this was to utilize actively mating pairs of brine shrimp—that way we knew at least one in each mating pair was healthy!

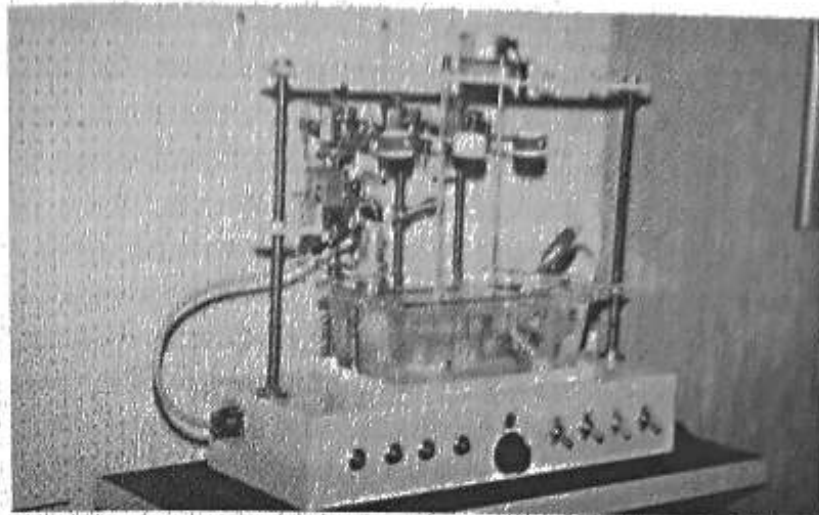
We constructed a mechanical randomizer that would pick one of six possible times when a small cup containing brine shrimp would invert, dropping them into boiling water below. We had no idea which of these six possibilities the randomizer had selected. The critical portion of the experiment contains the six consecutive “potential stimulus” (animal life termination) time blocks of twenty-five seconds each. A time-delay switch was activated, which gave us ten minutes before the automated experiment run would start. The cup dumping device would invert the cup and its contents upside down, and then quickly turn the empty cup upright again. The cup return was necessary because even a drop of water later dripping from a still inverted cup could contain a baby brine shrimp, almost invisible to the naked eye. If so, we could get an untimely reaction, not related to the drop time selected by the randomizer.

Figure 3B shows the automated cup dumping device. The middle cup was the one that would invert dropping its contents. We had a heating coil in the water and a thermostat that would keep the water at the proper temperature. A little paddle in the water rotated and kept the water circulating. A thermometer allowed us to take readings prior to the



Figure 3A – Brine Shrimp in Dump Cup

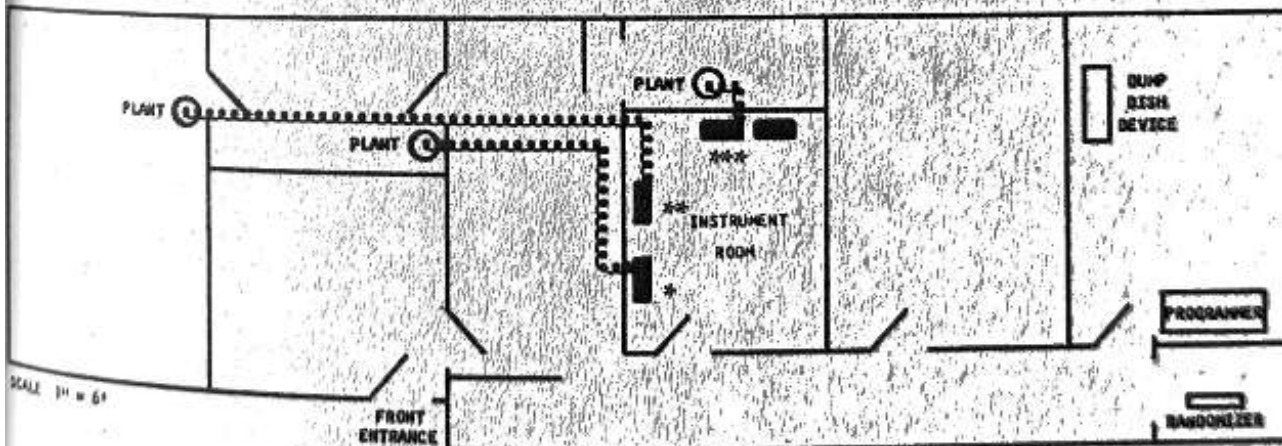
Figure 3B - Cup Dumping Device



beginning of each run. The experiment environment comprised the inter-connecting rooms in which the experiment was conducted. Within this immediately accessible and frequently used area, each plant then being monitored, the plant monitoring instrumentation, and the animal life termination system were located in different rooms.

The experiment was designed to see if the termination of the brine shrimp caused reactions from plants which were being simultaneously monitored at the three separate lab locations. Four polygraph instruments were involved, all located in one room. Each of three polygraphs was attached to one of three plants, each plant located in a separate room (fig. 3C). The fourth polygraph, used as a control,

Figure 3C - Laboratory Floor Plan



was attached to a fixed value resistor, the value determined by the average ohms resistance experienced during earlier observations while designing the experiment. That control polygraph's GSR amplifier sensitivity was also based on earlier observations. On this control polygraph the resulting tracing for each experiment run was expected to display a straight line tracing showing that there was no voltage surge nor any other extraneous interaction with the instrumentation. All interconnecting doors were closed during the actual experiment run.

As part of an extensive effort towards complete automation, we had assembled equipment (*fig. 3D*) that served as a programmer and recorded on a moving chart when each event involved in the automation occurred. This was a mechanical version of that which is now more easily accomplished using a computer. We had twenty aluminum disks with niches cut into them that could activate up to twenty separate switches. We had a standard polygraph chart drive built into this device with four recording pens. Each of these pens could be acti-

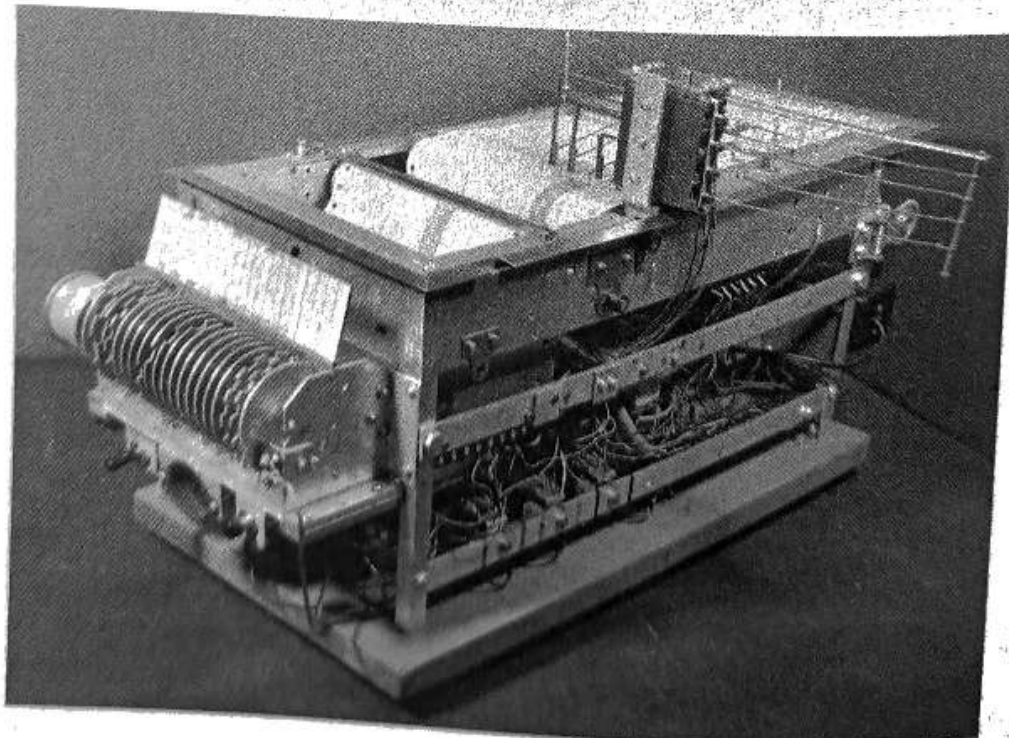


Figure 3D -
Mechanical
Programmer

vated upward or activated downward. To activate the pens, we used small direct current switching devices from a model electric train store. With an upward or downward activation for each of the four pens, we could get eight channels of data. Even though it was done mechanically, somewhat crude compared to modern technology, it did record exactly what was going on during each experiment run after we activated the randomizer and set the time delay switch before leaving the laboratory.

Each plant had a trickle of electricity going through one of its leaves as part of the GSR circuit. At the time selected by the randomizer, the cup dumping device at the far end of the lab would dump the brine shrimp into the boiling water, ending their lives.

A most important aspect was the total automation of this experiment. Earlier experience had shown us that when we attempted to remain in the lab area during any phase of the experiment run, the plants appeared to be tuned into our presence. When this happened, human presence easily took priority over the comparative subtlety of an event such as the demise of brine shrimp several rooms away. To completely address this problem we had to have somebody not connected with the lab personnel purchase the plants and place them in a holding area in the building where Bob Henson and I had no prior contact with them. We'd go to that area just prior to starting the research run, taking three plants into the lab. One plant was located in each of three separate rooms and electroded. This was accomplished by using a leaf clamping device similar to that illustrated in the last chapter.

Leaving the plants no opportunity to become attuned to us we would quickly activate the randomizer and set the time-delay switch as we left the laboratory, and exit the building, going at least a full avenue away. The plants were left alone in the lab. Only when we were extremely careful to follow this procedure did we get really good data. When the

brine shrimp died, the electroded plants reacted on a statistically significant number of occasions. On the basis of preliminary observations, to address the possible problem of habituation, it was determined that the same three plants were not to be used for more than one research session.

On Sept. 7, 1967, I gave a presentation before the Tenth Annual Parapsychology Association meeting in New York City. In December, 1967, the *Journal of Parapsychology* published an abstract on our plant research (Vol. 31, No. 4).

A report on the experiment titled "Evidence of a Primary Perception in Plant Life" was published in the Winter, 1968 edition of the *International Journal of Parapsychology*.

ATTEMPTS TO REPLICATE

Unfortunately, the care that we put into the automation of this experiment appears not to have been exercised by others attempting to replicate our published experiment. As best as we could determine, the people trying to replicate really didn't understand how to automate human consciousness out of an experiment. They thought you could go to the other side of a wall and watch the experiment unfold through closed-circuit television. That wall meant nothing as far as the plant-to-human attunement was concerned.

Instead of waiting to bring the plants in immediately prior to the experiment run, not allowing them to get attuned to the experimenters, we learned that they would do things such as washing the leaves with distilled water. Such seemingly "scientific" procedures were counter-productive. The plants in all probability remained attuned to them, and though they left their lab area, such a plant attunement would follow them rather than be confined to programmed events in the lab area.

After reviewing the methodology involved in replication attempts, I came to a conclusion that there needs to be, in some manner, a way to convince the academic community to include in their science courses methods of properly automating biology oriented experiments. I believe that the need for automation and for awareness of methods of achieving meaningful automation is mandatory when attempting biocommunication research. Otherwise, the repeatable experiment will be elusive. The role of human consciousness appears yet to be understood by those attempting to conduct replication of such experiments.

IMPORTANT DETAILS

One of the principal problems in conducting biocommunication research is that of experiment repeatability. Mother Nature doesn't appear to want to jump through a hoop ten times in a row merely because someone wants her to. Unfortunately, the requirements allowing for the accumulation of good data produced by a repetition of the same event are in direct conflict with the observations which suggest that spontaneous events are required to stimulate reactions. Unless one creates a properly automated experiment, it appears that one cannot easily eliminate the connection or bond between the experimenter and the life form being monitored.

In order that biocommunication experiments be conducted properly, the researcher needs at least tentatively to concede that a seemingly small detail can actually become an important factor:

- Has the plant intended for use already been in the lab more than an hour or two prior to being used in an experiment?
- Are there animal experiments going on in the lab at the same time plant experimentation is occurring?

- Was any life form being injured or terminated near the plant's location during experimentation?
- Had the plants being tested already bonded with the experimenter? Even a casual daily encounter such as watering the plant appears to create a bond.
- Is there any one of a variety of other interferences occurring in the research environment, such as noise, visitors, or even a phone conversation?

It's easy to pretend such things don't matter. It is my experience that they do. Details of the two failed attempts, mentioned later, to replicate the "plant-brine shrimp" experiment reveal a failure to totally automate, and to eliminate the consciousness of the experimenter from the experiment. This is quite different from merely automating the mechanics of the experiment.

NOTES:

1. During nearly 35 years since the published report describing our use of the termination of brine shrimp as a programmed plant stimulus, we have received only one letter and one post card complaining on behalf of the brine shrimp.

CHAPTER FOUR

Initial Reactions from the Scientists and the Public

This chapter will deal with reactions from scientists and the public, primarily relating to my research with plants, although preliminary observations were already in progress with eggs, bacteria, and human cells. These are detailed in the next three chapters.

After the plant-brine shrimp experiment described in the last chapter was published there was rather intense public interest. Reprints of the published report were requested and widely distributed. A lot of science related interest was also expressed. When a mere column and a half article about the research appeared in the April, 1969 issue of *Electro-Technology* magazine 4,950 scientists responded, requesting more information. In *Main Currents In Modern Thought*, a respected philosophical journal, Fritz Kunz¹ wrote:

At rare intervals, some empirical item, loaded with philosophical significance, comes forward in science, particularly in biology. Employing the same kind of polygraph which is used to test emotional stimulation in human subjects, Cleve

Backster has found that plants register apprehension, fear, pleasure and relief. One of the conclusions he has reached is that "staggering" as it may be to contemplate, a life signal may connect all creation.

AN INTERESTING VISIT TO YALE UNIVERSITY

On November 3, 1969, following my lecture at the Yale University Linguistics School, I returned to the second floor accommodation in a dormitory where visiting lecturers were housed. Here I met with some graduate students that I had invited up to work with a polygraph that I had brought with me, to allow them to attach a plant to the GSR electrodes for some personal observations. When I requested a plant they stated that they had plenty of ivy that grew all over the outside of the building. Having previously electroded detached plant leaves with success, I had them pluck an ivy leaf and place it between two sensor plates which were attached to the polygraph instrument. I then asked if they had any insects around that could be utilized for hopefully stimulating a plant reaction that would be recorded by the polygraph. Although technically not an insect, they captured one of New Haven's numerous spiders that typically make their webs in many rooms. They placed the spider on a table and when one student would surround it with his hands and frustrate its attempts to escape, the electroded ivy leaf would show no reaction on the moving chart. But when he took his hands away, as the spider became conscious that it was able to run, you'd see a huge chart reaction, just prior to its attempt to escape. This sequence was repeated several times.

Then they decided to let the spider loose on the carpeted staircase leading down to the first floor, and encourage it to try to escape. One grad student went down the dimly lit stairs looking for the previ-

ously released spider, while the others watched the polygraph chart to see if chart reactions would indicate that he was getting close to the spider. You could hear the student down the stairs say, "I don't see where it went," and one of the students near the polygraph upstairs say, "There's no reaction here," meaning the leaf tracing was not active. Moments later, one said, "Wait, there is some reaction here," then we heard the student down below say, "I think I found him!" The upstairs crew saw a big reaction the same moment the student below announced, "I've got him!"

The occurrence of this observation seemed to me somewhat unusual for Yale, being an example of the unbridled mind — grad students at play in spite of their Science 101 course likely telling them such things were not possible. I'm sure their lives weren't quite the same after participating in that event. Filled with enthusiasm, the following day they taped an interview with me for their Yale radio station program, but the interview was never broadcast. I suspect those in charge found the entire biocommunication subject a bit difficult to deal with, not having personally witnessed the prior evening's activity.

A LAB INVASION BY CURIOUS MINDS

During that period, I saw myself as a catalyst for research, rather than accomplishing something conclusive. My lab was invaded by curious minds of the time, including Arthur Ford, a famous medium, and his friends. In his last book, *The Life Beyond Death*, he stated in the epilogue:

Cleve Backster, by demonstrating with the polygraph that plants react emotionally to events of their environment—particularly to human intentions—has shown that we live in a living

and sensitive environment, not an inert and dead one. He has also shown that the force which communicates emotional intent—still unmeasured and still unidentified by science—easily penetrates any known physical obstacle, including walls of lead and concrete. Again, subtle and pervasive forces influence the behavior of living things.²

I had been very careful about properly following scientific protocol, relating to first publishing in a scientific journal, prior to interacting with the popular media until after my report's publication. References to the now published research were made in numerous books and many favorable articles were written in popular magazines. The first feature popular type article was in the March, 1968 issue of *National Wildlife Magazine*, with a feature article follow-up in their February-March, 1969 issue. Among others that followed were feature articles in *Argosy*, *McCall's*, and *Harpers*, along with coverage in *Reader's Digest* and *Saturday Evening Post*. Favorable articles also appeared in national newspapers, such as the *Christian Science Monitor* and the *Wall Street Journal*. Even the original *Life* magazine staff had shown an interest through a series of interviews, but the magazine ceased publication in December, 1972, just prior to the article's planned publication date. In 1973, *The Secret Life of Plants*, a book by Peter Tompkins and Christopher Bird³ was first published. This book hit the *New York Times* bestseller list and did much to acquaint the public with many little known aspects of plant life.

TELEVISION APPEARANCES

Network television proved to be an excellent method for informing the public of my research. As a talk show guest, in addition to radio, I was asked to appear on numerous TV shows including Johnny

– With David
a philodendron



Carson, Art Linkletter, Merv Griffin, and David Frost. The latter appearance was memorable because David Frost kept asking me if the electroded philodendron plant I was using in my on-camera demonstration was male or female. I suggested he go over and lift up a leaf and take a peak. Before he even approached the plant, the large lab meter I was using to display the polygraph's GSR type activity showed a wild reaction, evoking a very amused response from the studio audience (*See fig. 4A*).

I wasn't on an ego trip when I did television interviews. I knew it was a mass media dissemination technique, where I was getting information to millions of people, as there were then only three major television networks. I'd been hearing of events in the past where some scientific discoveries were overlooked by what appeared to be a conspiracy of silence. With my research there was no problem with any conspiracy of silence, because back then your television audiences may have involved nine or ten million viewers. I had no publicity agent and, as a matter of policy, I did not actively seek

those invitations for appearances on television or for interviews on radio.

CATALYST FOR DISCUSSIONS

An article entitled "Plants Discovered Tuning In on Us" appeared in a 1971 issue of *Catalyst* magazine, (Vol. 2, No.1). In the "Letters to the Editor" section of the following issue, most of the responses expressed appreciation for the article. I was provided the opportunity to respond to the letters in that same issue. Following is my interchange with a Yale professor who stated:

"This unfortunate article infers that plants have capabilities that have not been supported by any reasonable kind of scientific evidence. Conclusions drawn by the unspecialized reader may be particularly misleading..."

My response to this letter from Yale Forestry Professor William H. Smith, was this:

If the "reasonable kind of scientific evidence" which Professor Smith says is missing relates to data consistent with the conventional body of botanical information, he certainly seems correct. But if he is referring to evidence defined by the scientific method, I must respectfully disagree. It is my sincere belief that the ignoring of inconvenient evidence should not be confused with the nonexistence of scientific evidence. In regard to plant life, extensive published material seems to have been overlooked by Professor Smith.

Fifty years ago the attitude of total rejection by scientists was certainly the case as related to the published results of extensive plant research conducted by Sir Jagadis Chandra Bose, who meticulously adhered to scientific methodology utilizing extremely sophisticated instrumentation. He stated with great certainty that plants experience an equivalent of emotions.

Twenty-five years ago, many scientists felt it appropriate to reject the results of extensive research on plant life conducted by Yale University Professor Harold Saxton Burr. Dr. Burr made a ten-year continuous chart recording of the electrical potential activity exhibited by a tree. The results were startling. If scientists had then been more receptive to work such as this, I am sure my current research results would not come as such a surprise. An old adage, which seems to have adequate scientific method orientation, states that "one should not be down on what he is not up on." Having already attached polygraph electrodes to grown trees, I feel reasonably certain that any scientist, especially one associated with a school of forestry, will be in for some surprises should he do the same.

SOVIET SCIENTISTS RESPOND

In 1972, Soviet scientist, V. N. Pushkin, in a popular type article entitled "Flower Recall," describes his successful replication of my research with plants. This was accomplished by their use of EEG, rather than GSR instrumentation. His research team also chose their subjects carefully, using hypnosis to attune a person seated one meter away from a household geranium attached to their EEG instrumentation. They were able to get reactions from the plant each time the subject was emotionally stimulated using hypnotic suggestion.

In this 1972 article⁴, he postulates: "RNA, ribonucleic acid, puts together information with a special genetic code and passes it on for synthesis by albuminous molecules. Contemporary research in cytology and genetics bears witness to the fact that each living cell has an extremely complicated informational job." He further speculates, in view of the theory of evolution, that animal/nerve cells were formed after plant cells. "From this one may conclude that the informational basis for the behav-

ior of animals arose from the informational basis of the vegetal cell. Thus it seems that man's psyche, however complex it may be, our perception, thought, memory, all are only a specialization of that informational basis which has a place at the level of the vegetal cell." And from his findings he concludes: "A psyche exists, it would seem, in living cells devoid of a nervous system. One thing is for sure, research into the contact of plant with man can shed light on some of the most urgent problems in contemporary psychology."

Although many American researchers were avoiding public commentary on my work, I got a surprising reaction from the Eastern-block researchers. In June, 1973, I was appointed chairman of one of seven sections at the International Conference on Psychotronic Research, in Prague. My section at the conference was entitled Plant, Animal and Human Communication. I was surprised when attending reputable scientists from the Soviet Union expressed their enthusiasm and asked to have their picture taken with me! Apparently, my research was cause for more scientific excitement away from my home country.

CHRISTIAN SCIENCE MONITOR

Somewhat typical of the reactions I received from some establishment scientists of the time, the 1970's, are reflected by the following quotes obtained by Frederic Hunter when preparing his article for the December 11, 1973 issue of the *Christian Science Monitor*.

"It's a waste of time," said Dr. Otto Solbrig of Harvard University's biology department about my observations. "This work is not going to advance science very much. We know enough already about plants so that when someone comes up with something like this, we say it's quackery. You might say we are prejudiced. Maybe we are."

"This is a field which attracts quacks, charlatans and people who lack professional credentials," comments Yale Professor, Arthur Galston. "It's not a field into which many reputable workers have cared to venture. I don't say Backster's phenomena are impossible. I just say there are enough other things of more value to work on." He goes on to say: "It's attractive to think that plants are listening to you or that they respond to prayer, but there's nothing in it. There's no nervous system in a plant. There are no means by which sensation can be transferred."

On a more positive note, in that same article, Dr. Harold Puthoff, then a physicist at Stanford Research Institute, said, "I don't regard Backster's work as quackery. The way he conducts his experiments is pretty good. It's not the sloppy thing that most people believe who think the work's no good."

MUSIC, PLANTS AND MARCEL VOGEL

In 1973 Dorothy Retallack⁵ authored a book entitled, *The Sound of Music and Plants*, describing her quite carefully conducted series of experiments at Temple Buell College, now part of the University of Denver. Although that book is in all probability out of print, a detailed account of her research is provided in *The Secret Life of Plants*, chapter 10.

Marcel Vogel's involvement in plant biocommunication research followed a challenge by International Business Machines (IBM) in Los Gatos, California, where he worked as a research chemist. The challenge was for him to give a course in "Creativity" for IBM engineers and scientists. The account of that which followed is also detailed in *The Secret Life of Plants*, chapter 2. At the time, not knowing many of the details involved, I did recognize Marcel Vogel as the first scientist, at least that I had heard about, who had taken seriously the material I was presenting. In figure 4B Richard Allen had



Figure 4B – Richard Allen, Marcel Vogel, Dorothy Retallack, and Myself.

organized a meeting of plant research enthusiasts in Long Beach. I was one of those attending, along with Marcel Vogel and Dorothy Retallack.

DR. GRANGER'S PROVOCATIVE REMARKS

Charles R. Granger, Ph.D., while Assistant Professor for Academic Affairs in the Division of Biological Sciences at Cornell University, got a group of his students to attempt to replicate my published "plant and brine shrimp" experiment.⁶ While their attempt was still in progress, Dr. Granger got transferred to the University of Missouri, St. Louis, as Assistant Professor of Biology and Education. The student group at Cornell was turned over to Professor Edgar L. Gasteiger, who seemed to push them for a conclusion by assigning a deadline, without sufficient time to work out their protocol problems. He

then called the uncompleted research a "failure to replicate" and used this at the 1975 American Association for the Advancement of Science (AAAS) meeting, discussed later in this chapter, as ammunition against the credibility of my research.

Dr. Granger's introduction of me at the University of Missouri Science and Mankind Conference in March, 1974, is provided, as it contains some very provocative remarks:

A strange thing happened late one evening—or early one morning, depending on your time reference, on February 2, 1966. Ah! You say that's when Cleve Backster discovered that plants have emotions. Perhaps. But there is more to it than that. What you ask? Some presuppositions, as described by Professor Rigden last Thursday evening, of the Scientific community were brought under attack by an individual outside the science establishment.

Mr. Backster has devoted more than twenty-five years to research in application of the psychogalvanic reflex in a variety of behavioral studies. During this time he has earned eminence in the field of polygraph operation. He developed the effective and widely used Zone Comparison Polygraph Technique. He has been associated with the U.S. Army and CIA as a polygraph expert. He has been an expert witness at a Congressional hearing on polygraph usage in government. He is currently serving on the Board of Directors of the American Polygraph Association. In short, Mr. Backster is a world-recognized authority on the polygraph and polygraph usage.

Quite aside from his technical expertise Mr. Backster is also a teacher, and it is through this interactive enterprise that Mr. Backster has been able to support his curiosity of nature. A main question arises: how could a man of this specialized background, that is—one who is not a botanist or plant physiologist trained in academic protocol—have the audacity to challenge the presuppositions of the established scientific community? Heresy, you say? Perhaps.

On that morning in 1966, did Cleve Backster

have on his mind to prove that plants can perceive emotions? No!

After working on a polygraph technique for some hours he decided to take a break and water some of his office plants. Being a curious individual he thought it would be interesting if he could hook up his polygraph to a plant to see if he could determine how fast the water moved up the plant. A naive question, some might think.

He had not written a grant proposal or signed a contract for money with a preconceived notion of proving or disproving anything. He was not practicing grantsmanship, the common practice among too many scientists of the established community. Mr. Backster was just attempting to satisfy his innate curiosity about his natural environment.

The genius of his activity that early morning lay not in the statement of a problem or in the formulation of a hypothesis but rather in his perception of his environment and the recognition of the unusual. His mind had the ability to bridge the traditional presuppositions existing about plants at that time. He, in fact, was being creative in the scientific sense.

How was this "transgression" by an outsider taken by establishment scientists? As you might expect from a community of "open-minded" scholars, it was mostly rejected. And I might add, rejected without additional independent research of their own.

It sounds as if I may be telling a story—from the history of science—that you may have heard over and over again. What about the reception of the unique ideas of Galileo, Copernicus, Darwin, Dalton, Newton and Einstein? Do you see any parallels between their problems of initiating new ideas and those of Mr. Backster?

Are we falling into the trap of rejecting what is new because it doesn't follow our present presupposition of plants and animals and their behavior? Perhaps. Is there, in fact, such a phenomenon as plant emotions? Perhaps there is. And now may I introduce Mr. Cleve Backster...[end of introduction]

THE U.S. CONGRESS ASKS THE QUESTION

Obviously, from 1966 to the present, I have made inroads in terms of showing the scientific community my observations, appearing not only before my peers but also a variety of prestigious scientific groups. This of course, is part of the requirements outlined by scientific tradition. During my testimony on polygraph-related matters back in

June, 1974 before a subcommittee of the Ninety-third U.S. Congress, the question was asked of me: "Do I understand that you are doing some sort of experimentation with plants?" I ended a brief overview of the research requesting that they place into their record an already prepared listing of thirty four lectures I had given to scientific and academic groups dating back to March, 1969. (For the list of lectures listed in the congressional hearing publication, see Appendix I.)

An interesting example of the caliber of the invitations during this period is illustrated by my 1973 presentation as part of the University of Michigan Future Worlds Lecture Series. Among the presenters

were U. S. Supreme Court Justice William O. Douglas, Arthur C. Clarke, Buckminster Fuller, Stanley Krippner, J. B. Rhine and B. F. Skinner (see fig. 4C).

In 1974, an annotated bibliography titled "Evoked Biological Responses of Plants," was published by Mankind Research Unlimited, Inc. Washington D.C.. It contained world-wide references on the subject of plant biocommunication in books, journals, magazines, and newspapers. Included

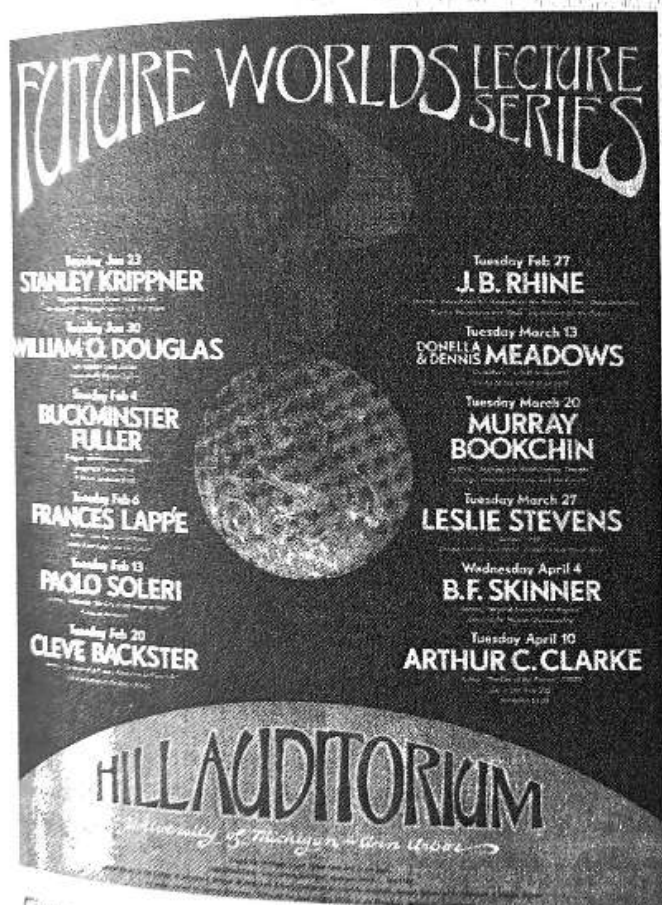


Figure 4C - University of Michigan Future Worlds Lecture Series

were more than 150 entries, most of them making direct or indirect reference to my work. A foreword was written by Stanley Krippner, Ph.D., a well-known name in the field of parapsychology, now affiliated with the Saybrook Institute, San Francisco, California. Dr. Krippner states:

"If plants demonstrate primary perception through either a rudimentary nervous system or through perturbations of a sensitive bioelectric field, this ability may characterize lower forms of life as well as higher life forms, including the human species. Advances in the study of plants might lead to a greater understanding of telepathy, clairvoyance, precognition, and psychokinesis among human subjects."

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

I defended my research in 1975 at the American Association for the Advancement of Science (AAAS) meeting being held that year in New York City. There were 178 symposia at that AAAS meeting, and my symposium was one of only ten that had an individual press conference. Also, the organizers agreed ahead of time to make the working session audio coverage of these ten symposia part of the AAAS tape library. My symposium was entitled, "Electrical Responses of Plants to External Stimuli," and was comprised of five speakers. One speaker critical of my research was Edgar L. Gasteiger, mentioned earlier. Another was John M. Kmetz, a biologist hired by the Science Unlimited Research Foundation, a San Antonio, Texas organization established in good faith by Bill Church of Church's Fried Chicken, to pursue biocommunication research. The other two speakers were somewhat less negative. Each participating speaker was allowed

twenty minutes. This provided each of my critics twenty minutes to say my research had no basis, and I had a total of twenty minutes to present a defense. Arthur Galston, the previously quoted Yale University botanist, was the moderator, and I expected to face a lot of criticism.

Before leaving San Diego for New York City to attend the function, I assembled 400 packets of materials for distribution. In addition to my published report, *Evidence of a Primary Perception in Plant Life*, I had a bibliography that Daniel Karron⁷, then a high school student, helped me compile. Included were 109 reference articles from science related publications that we felt were pertinent. Also included in each packet was material regarding related research the Soviet scientists were conducting, and a reprint of my earlier mentioned 1974 testimony before Congress. I was cautious enough to take only 200 of the 400 packets to the AAAS press office. The remaining 200 were left in my room in that same hotel. When the time came for the press conference, the day before my symposium's scheduled working session, I was told by the AAAS staff that they had misplaced the 200 packets I had delivered. They did provide those in attendance a brief one page blurb not at all favorable to my research. I said, "wait a minute," and went up to my room and got the other 200 packets which I then distributed to more than 150 science writers from the United States and numerous foreign countries. Because of the demand, the AAAS press office did finally locate and later distribute the original 200 packets to those expressing interest.

The next day, at the working session, I was introduced as the "father of primary perception." But when I got up to speak, I had to say, "The way you people have been receiving my research, I feel more like the unwed mother!" A few probing questions came from the critics, which were not difficult to handle. The AAAS symposium staff appeared to

be a bit ruffled as they didn't start the audio tape coverage on time and they upset all my slides onto the floor. Fortunately I had them all numbered, so they got them back in sequence, and gave me extra time for the wasted minutes. Most of the questions from those attending the session reflected a very positive kind of interest.

You don't go to such an event to win; you find satisfaction in merely surviving. I was able to walk away thanking them for the opportunity to be part of so prestigious a gathering. I'm still a member of the American Association for the Advancement of Science, and have been since 1966.

SCIENCE NEWS ARTICLE

Following the AAAS meeting in New York City, this article appeared in the February 8, 1975 issue of *Science News*⁸, a respectable publication that is a popularized version of *Science Magazine*.

SCIENTISTS SIGH OVER PLANT 'PSI'

A long standing theory on psychic phenomena in plants, popular with the public, has been disproven and disposed of in the usual scientific way. If you ask the scientists, that is. The unsinkable Cleve Backster has a different primary perception of the whole affair. Backster, father of the theory that plants respond "emotionally" to human thoughts and actions, met with a panel of wise and solemn scientists at last week's AAAS meeting in New York. The scientists, two plant physiologists, came in the best scientific tradition to point out the gaping discrepancies in Backster's work. Backster came to do what he's been doing for the past several years—defend his observations of psychic phenomena in plants.

A long-time polygraph operator, Backster developed his theory in 1967 after hooking a plant to a polygraph and observing various blips on the recording chart. The blips seemed to coincide exactly with the timing of certain of his

thoughts and actions such as burning leaves and killing brine shrimp. He published three articles about his experiment in parapsychology journals and hasn't repeated the experiment or published related results since.

Backster has become somewhat of a celebrity, particularly since the *Secret Life of Plants* by Peter Tompkins and Christopher Bird appeared in 1972. But growing along with a groundswell of plant owners tuning in to their green roommates is the number of plant scientists who feel his message is nonsense and must be countered. Repeating Backster's experiment seemed to be the best starting place, and a AAAS symposium seemed to be the best forum for presenting the findings. So Backster and his scientific challengers met in New York to compare data.

During a press conference and official working session, physiologists Edgar L. Gasteiger of Cornell, and John M. Kmetz of Science Unlimited Research Foundation in San Antonio, presented the results of experiments attempting unsuccessfully to replicate Backster's results. They found no evidence of a correlation between bioelectrical activity in plants and human thoughts or actions. In the process of disproving the Backster effect, Kmetz figured out where it came from. Plant psi, he contends, is really only spurious electric signals within Backster's electronic equipment, amplified and recorded by a system not shielded for such spurious signals.

Backster, who calls himself "a stickler for the scientific method," defended his experiment and criticized the others on several grounds, including small differences in their equipment, "consciousness interlock contamination" of their test plants and brine shrimp and a stressful laboratory environment. Yale plant physiologist, Arthur W. Galston, countered these criticisms by saying "the hallmark of respectability is repeatability," and a scientific generalization shouldn't depend strictly on the equipment one uses.

The press conference became chaotic after Backster reported psi responses in yogurt cultures and Kmetz reported another failure to replicate such results. An unsinkable Backster afterward regaled two dozen reporters in the hall

with his yogurt experiments while the scientists left in various states of agitation, frustration and embarrassment.

Why did the scientific community take on Backster, anyway? What's wrong with people believing they can communicate with their plants? Galston says scientists have a social responsibility to close the gap between what the public believes about nature and what the scientists believe. Besides this, pseudoscientific thinking has led some to believe they can eradicate insects by irradiating pictures of diseased fields and so forth. This type of thinking is "pernicious nonsense in a world with a food problem," Galston says.

What did the sessions accomplish? "For the first time," Galston told *Science News*, "scientists and reporters heard Backster himself state that he has done only one experiment nine years ago, not repeated it and that he hasn't proven anything." "We have, in the usual manner, cast doubt on the original work."

Backster remains unconvinced of this. "They nowhere near disproved it," he maintains. "This phenomenon is real and it isn't going to go away. It's just as alive as any leaf out there, and I am going to continue studying it and I hope other scientists will too."

This event has been the only organized attempt by the scientific establishment to take me on in an open public forum. Many individual scientists however, have shown great interest, especially if they were not in the position of "defending the faith" in some biological theory or the existing body of knowledge. Conversely, I consider the well-known Yale botanist, Arthur Galston, in another category. Dr. Galston was one of the few scientists who went to China early on and returned saying great things about acupuncture, having witnessed operations performed under acupuncture without anesthesia. He may have been open minded on that, but he was the defender of the faith in his field of botany.

The *Science News* article twice referred to me as

the "unsinkable Backster" because I simply refused to be shot down. The well-known anthropologist, Margaret Mead, was present at that meeting and I understand that she commented to her friend, Jean Houston, "They didn't do such a good job of sinking Backster!" I regret I never had the opportunity to meet Margaret Mead, but I had the pleasure of first meeting Jean Houston in 1971 when she and her husband, Robert Masters, visited my lab.

One interesting response to my 1975 AAAS participation, prompted by my revealing that I was working with live bacteria in yogurt, was from a prominent company that distributed yogurt in the New York City area. They contacted me and appeared to be quite disturbed. It seemed as though they did not want their customers to be aware that they were eating live bacteria, even though it is true. This could possibly require that they educate the

yogurt eating public about friendly vs. unfriendly bacteria. After acquainting them with the scope of my work with yogurt, they apparently made the decision to make no further contact. My research with yogurt will be detailed in chapter 6.

Perhaps the strangest response, again related to yogurt, came later in the January 1976 issue of *Esquire* magazine stating, "Scientist claims yogurt talks to itself." My research with yogurt was among nearly 100 items cited in their category of "Dubious Achievement Awards of 1975." It was one of the few that made the cover. The description in the *Esquire* article reads as follows:

Boysenberry to Prune, Boysenberry to Prune: Do you read me? Lie Detector expert Cleve Backster reported in the annual meeting of the American Association for the Advancement of Science that he had detected



Figure 4D - Yogurt Makes
Esquire Magazine Cover

electrical impulses between two containers of yogurt at opposite ends of his laboratory. Backster claims the bacteria in the containers were communicating.

That was a strange way to state my yogurt research results and a strange dissemination medium. All that aside, the message is accurate.

FAILURES TO REPLICATE

The AAAS symposium presentations by John Kmetz and Arthur Gasteiger revealed problems in their approach. They made it obvious that they were not following proper automation procedures. The plants were in a holding room seven days in advance of their intended use. They then bathed the leaves with distilled water. Any kind of experimenter contact with the plants prior to the actual experiment usage can compromise the experiment by allowing prior attunement between the plant and the researcher rather than the more subtle stimulus provided by the death of the brine shrimp.

John Kmetz had visited my New York City lab in October, 1973, and had ample opportunity to personally observe spontaneous events of biocommunication. Upon his return to San Antonio, rather than to work out the problems involved in total automation and to eliminate human consciousness from his attempted replication of the plant and brine shrimp experiment, it appears that he found information concerning his then current failure in demand. He was invited as a participant at the 1975 AAAS symposium mentioned earlier. Rather than constructively pursuing biocommunication research, which I believe was the original function of the Science Unlimited Research Foundation, Kmetz apparently chose to capitalize on his failure to replicate.

THREE TRIPS TO BRAZIL

During July of 1976 I was invited to the First Brazilian Congress for Parapsychology and Psychotronics. Involved were presentations of my bio-communication research, first in Rio De Janeiro and then in Sao Paulo. I found Brazil to be a fascinating country. In Rio I asked the interpreter assigned to me where the most interesting activities were, a place where the conference organizers would probably not want me to go. She took me to the Center of the Pathway for Spiritual Truth, located on the outskirts of Rio. This turned out to be an Umbanda center, which also included an orphanage for more than 200 children. The staff members at the center, very bright people educated in many traditions, were very enthusiastic about my research.

In June of 1977 I returned to Brazil on a second lecture tour and again went there in July of 1980. The last two trips further introduced me to various levels of the Brazilians' spirituality. Those who were in the Umbanda religion practiced "psychic healing" on many levels, mostly directed toward the level of the local people. A typical ritual for those who embraced this kind of spiritism involved live drumming, energetic dancing on a dirt floor and blowing cigar smoke on the dancers, some of whom would then become possessed.

I had an opportunity to revisit the Center of the Pathway for Spiritual Truth in Rio and on that occasion was honored with an award for my biocommunication research achievements.

NOTES:

1. Main Currents in Modern Thought - May-June, 1969. Vol. 25 No. 5 Integrative Issues and Methods. Feeling in Plants by F.L.Kunz, p. 143s. This Journal promotes "the free

association of those working toward the integration of all knowledge through the study of the whole of things."

2. Arthur Ford, written with Jerome Ellison, *The Life Beyond Death* (New York: G.P. Putnam's Sons c1971) p.167.

3. Peter Tompkins and Christopher Bird, *The Secret Life of Plants* (New York: Harper & Row, 1973) Paperback edition published by Avon Books, 1974. Quality Paperback edition, published by Harper & Row in 1989, still in print.

4. Prof. V. N. Pushkin, Doctor of Psychological Sciences. *Flower, Recall!* Published in November, 1972 issue of ZNANIYA SILA (Knowledge is Power) translated by Christopher Bird.

5. Dorothy Retallack, *The Sound of Music and Plants* (Santa Monica, CA: Devorss & Co.) c1973 96p.

6. Plant "Primary Perception:" Electrophysiological Unresponsiveness to Brine Shrimp Killing. *Science*, Vol. 189 Aug 8, 1975, no. 4201

7. Daniel Karron later earned his Doctor of Philosophy degree at New York University and was employed by the Advanced Cardiac Surgical Engineering Research Laboratory at the New York University Medical Center.

8. *Science News* Vol. 107 Feb 8, 1975 No. 6, Controversy over Plant Psi. (Reprinted with permission from *Science News*, the weekly newsmagazine of science, copyright 1975 by Science Services).

CHAPTER FIVE

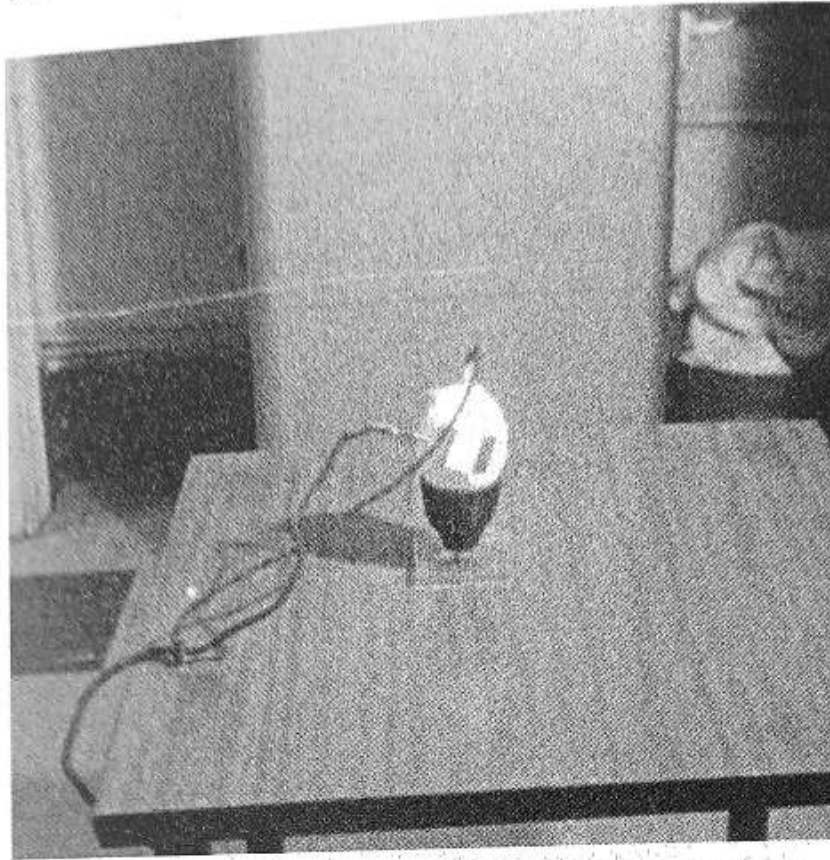
Observing Eggs



Fig. 5A - Pete

A chance observation in my New York City lab back in 1966 caused an expansion of the scope of my biocommunication testing. As previously mentioned, because of the cost of polygraph chart paper I would often monitor plant reactions using a large meter instead of the usual ink recording.

Each day when I fed Pete, the Doberman I mentioned in chapter 2, I would add the yolk of a chicken egg to his food (*fig. 5A*). One particular day I was monitoring a philodendron plant, using the GSR portion of the polygraph. The read-out was wired into the large meter which was within my view. When I cracked the egg to separate the yolk I noticed several strong movements of the meter's needle. The only event occurring in the lab at the time was my cracking the egg. I speculated that the plant, which was about fifteen feet away, was picking up something from that event. I thought, "An egg! Well, that's surprising. Something about the egg must have been alive. Okay, let me see if I can get an instrument reading directly from an egg."



*Figure 5B - Electroded
Chicken Egg*

ELECTRODING THE EGG

I then figured out a non-intrusive way to attach electrodes to an egg using the Galvanic Skin Response polygraph component. I cut from a common household sponge two pieces about $\frac{1}{2}$ inch thick and large enough to cover each GSR electrode. The pieces were sterilized by being boiled in water. Salt was added to the boiling water to later ensure better conductivity. I squeezed the excess water from the sponges and positioned a sponge on each side of the egg, opposite from each other. I then fitted a GSR electrode on the top of each sponge. A rubber band was used to hold the electrodes in place. The saline water from each wet sponge soaked through the eggshell just enough to make contact with the internal skin-like membrane surrounding the egg. This electroding technique was very successful and started a whole series of high quality observations involving the electrical activity generated within chicken eggs.

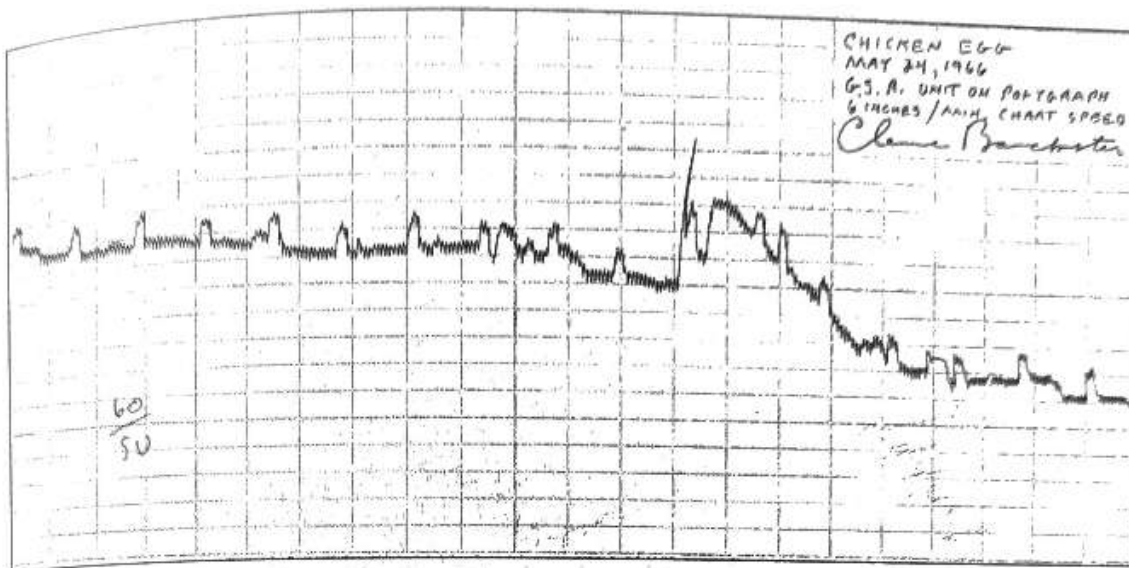


Figure 5C - Cyclic
Chicken Egg
Tracing Using GSR

STRANGE CYCLIC ACTIVITY

One day I noticed small but rapid cyclic serrations on the tracing from an electroded chicken egg then being monitored by GSR instrumentation. They looked very much like human pulse beats on a polygraph chart, except that they were much more rapid (*fig. 5C*). The cycle rate observed was around 157 per minute, the heart rate already established in the literature for a chicken embryo around three days along in incubation.

TAPPING INTO THE ETHERIC FIELD

Some outside the arena of traditional science might imply that I was tapping into the etheric field, that which would later guide the physical development and the timing of the circulatory system of the pre-hatched chick, if it were allowed to incubate. Yet nothing within the egg had been able to develop, not even the first cell separation, because this was a non-fertile egg.

I felt this was quite interesting because it would appear that we were getting into a mysterious area that scientists seem to have been side-stepping for a

long time, the so-called etheric field that seems to make every cell get to the right place and do the right thing at the right time. Science has done a lot of research on physical activity at the cellular level, but to identify the possible blue-print that informs each cell to precisely perform, such as causing one identical human twin to match the appearance of the other, is a fascinating but apparently poorly understood process.

While visiting my New York City lab Dr. Charles Granger, the Cornell University biologist mentioned in chapter 4, who later became Chairman of the Department of Biology at the University of Missouri, actually witnessed an example of this egg pulsation phenomenon. He was so impressed that he took the previously electroded egg back to Cornell University, to inspect it under the microscope to be convinced that it was non-fertile. He later confirmed to me that the egg was indeed non-fertile.

FROM GSR TO EKG AND EEG

I later began a whole new phase of research utilizing electrocardiograph-type instrumentation (EKG), conventionally used for heart monitoring and the electroencephalograph-type instrumentation (EEG), conventionally used for brain-wave monitoring. My research foundation purchased instrumentation including EKG and EEG modules in March, 1972, with a small grant from the Winifred K. Babcock Foundation. The EKG and EEG circuitry have an advantage over the GSR circuitry as they do not involve passing a current of electricity through the electrodes. Here, you are simply magnifying electrical impulses that originate within the biological material being monitored. The EEG circuitry on this newly acquired instrumentation is ten times as sensitive as the EKG circuitry, and is used to magnify and display more subtle reactions.

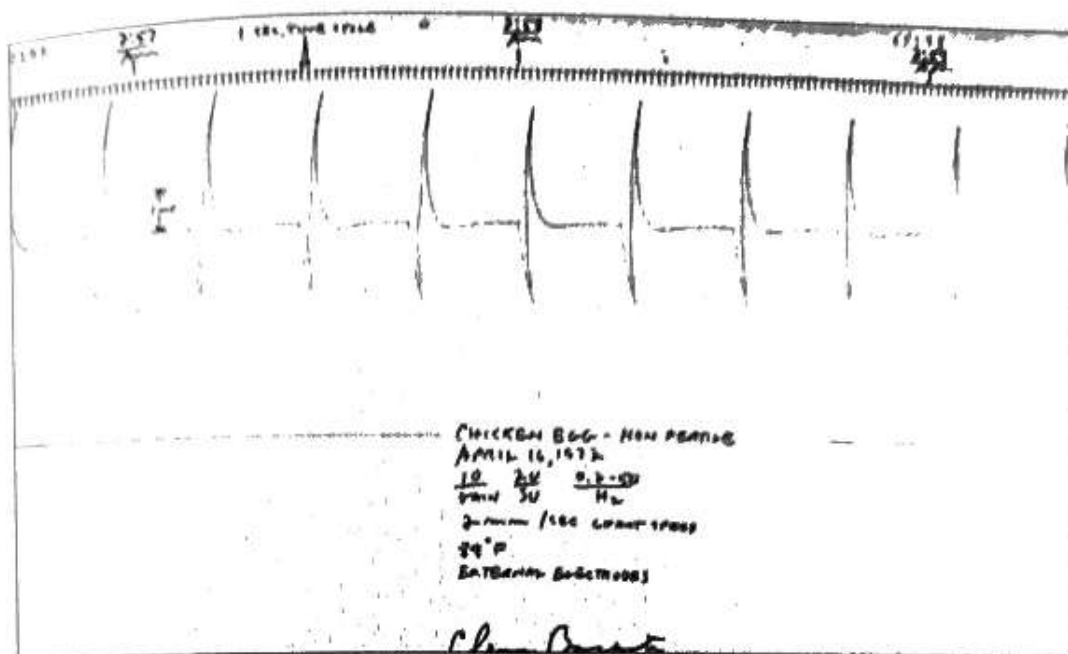


Figure 5D -
Single Cycle
Chicken Egg
Tracing Using
EKG

It should be noted that I have observed the heart-beat-like pulsation shown in figure 5C only when using the GSR circuitry.

Even a non-fertile chicken egg can exhibit a variety of electrical activities. Figure 5D is an example. Note the sizable cycles, an equal distance apart. Some of these examples illustrate cyclic activity in the millivolt range. Figure 5E is an example of four separate but equally spaced cyclic activities.

The egg tracings in figures 5C, 5D, and 5E illus-

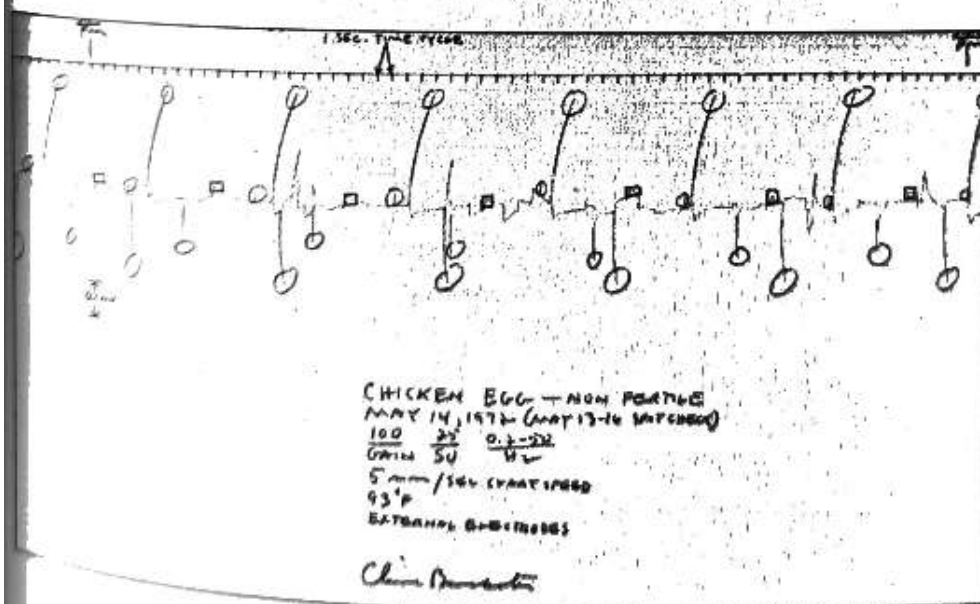
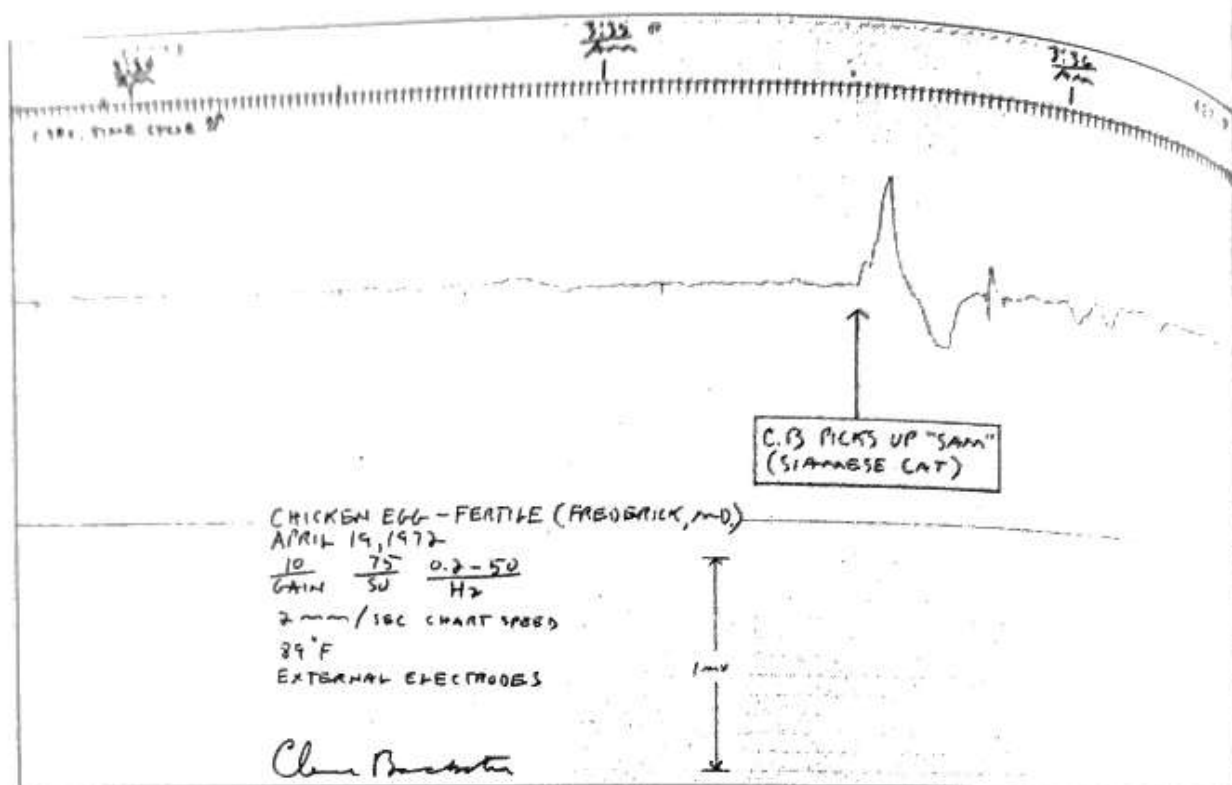


Figure 5E -
Complex Cyclic
Chicken Egg
Tracing Using
EEG



trate interesting electrical activity within chicken eggs, but are not intended to demonstrate biocommunication with the external environment.

Figure 5F - Chicken Egg Response to Aggravated Siamese Cat

EGG RESPONSE TO ENVIRONMENTAL STIMULI

The examples that follow are intended to demonstrate strong observational evidence of biocommunication with the external environment.¹ In the first example one needs to be reminded that cats are independent creatures by nature, Siamese cats seemingly even more independent, and Aries Siamese cats, forget it. Sam was born on the third of April. Those of you who are more familiar with cats know that they dislike being picked up without their giving you, in effect, prior permission.

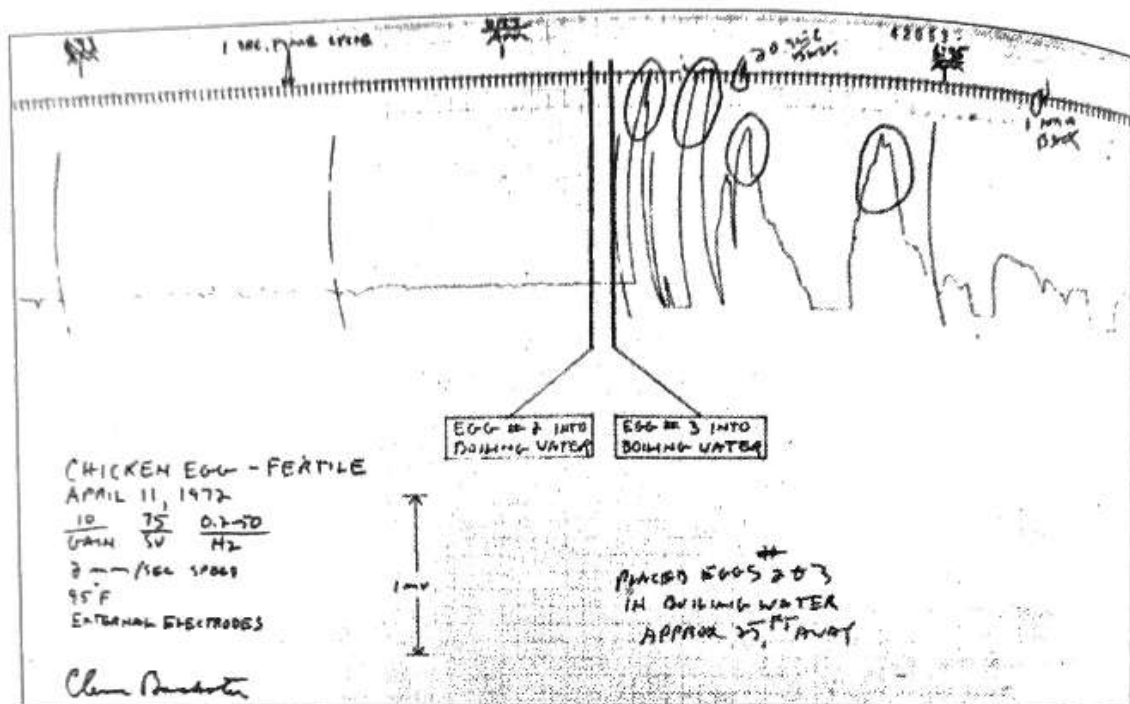
Figure 5F is an observation suggesting such an external awareness by an egg to an emotional stimulus emanating from Sam. All I did was abruptly pick up Sam, who had been sleeping in a back room



- Sam

and was walking down the lab hallway. I happened to glance in at the EKG-type tracing being produced by the electroded egg at the very time I picked Sam up. Of course his claws were out and to me it was obvious that he did not like my making the decision to pick him up (*fig. 5G*). This was at 3:35 am, and the building was empty, with no other activity in the lab.

On another occasion, having worked all night in the lab, I found myself quite hungry but decided not to go out into Times Square to search for a place to eat. A number of chicken eggs were on hand, so I took three from my research supply. Egg #1 was electroded and placed in a lead-lined box for shielding against more common electromagnetic disturbances. Eggs #2 and #3 were going to be my breakfast. After bringing a pan of water to a boil I took my stop watch and the breakfast eggs over to the hot plate, about 25 feet away from where the electroded egg #1 was located. I dropped egg #2 into the boiling water, and three seconds later, egg #3 followed. The stopwatch reading was then transferred to the moving instrumentation chart. I later noticed the short time delay before the first pair of reactions occurred. I feel it safe to assume that this was due to the time it took the heat to penetrate to a critical depth within the egg. You can see in figure 5H the



distance the recording pen moved for each millivolt of reaction strength.

Also in figure 5H, note the three pairs of reactions. Two of the pairs cause the tracing to go upward, and with the uncircled third pair the tracing went downward, hitting the mechanical recording pen limit stop.

I thought, "Wow, I finally have what I need as the possible design for a repeatable experiment!" Still wanting to conform with scientific methodology, I decided to make equipment that would fully automate this potentially productive egg experiment. I devoted several weeks building the equipment. Cannibalizing an old phonograph turntable, I equally spaced ten cornplasters on the turntable to stabilize each of ten other eggs. I designed the turntable to advance the next egg at seven, eight, and nine-minute intervals. A little mechanical boot kicked each newly positioned egg down a metal chute at its appointed time. As the egg rolled down the chute it actuated a microswitch which marked the moving instrument chart recording as the egg made its entry into a deep-fry pot of boiling water. Also, prior to the research run I set a time delay switch, giving me ten minutes to get away from the

Figure 5H -
 Chicken Egg
 Monitoring Other
 Eggs Dropped into
 Boiling Water

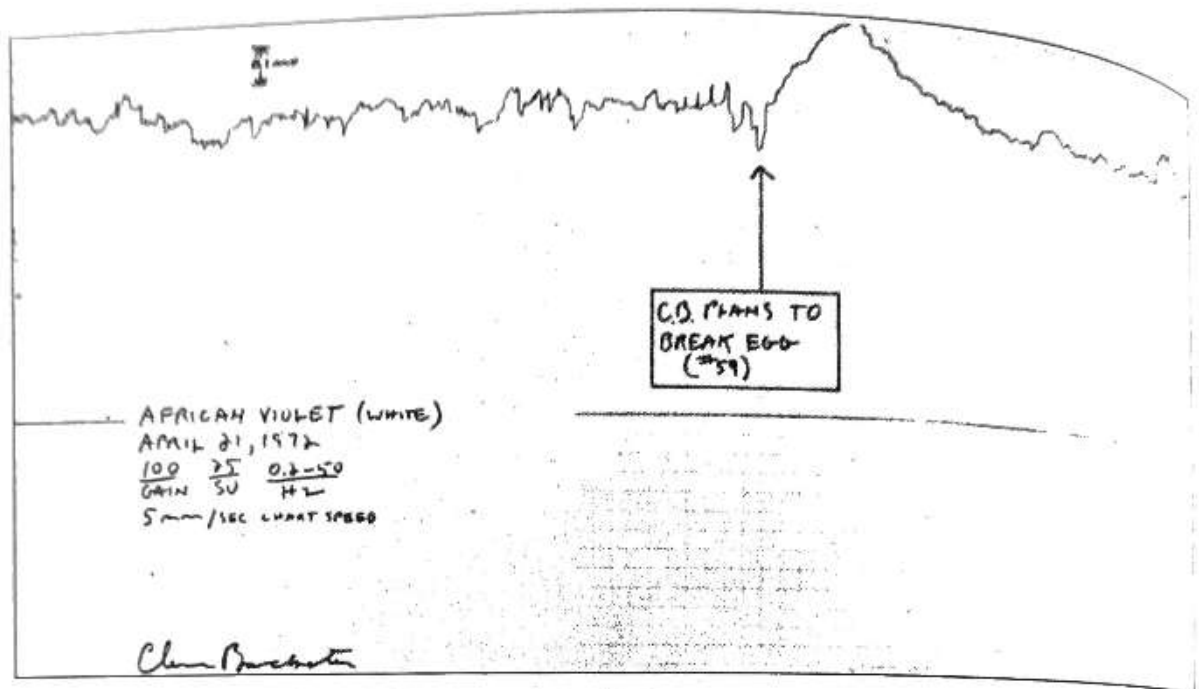
lab. All of the automation in the experiment protocol was an attempt to keep my consciousness isolated from the experiment.

I really thought I might have a winner. For my first experiment run, I electroded an egg for the EKG type chart recording, loaded the turntable with an additional ten eggs, actuated the time delay switch, and left the laboratory. After allowing enough time for all ten eggs to have been "pushed" down the chute into the boiling water, I returned. Upon returning, as I expected, I had ten hard-boiled eggs in the deep fryer. However, I was surprised to find only one chart reaction from the electroded egg when the first of the ten turntable eggs descended. It appeared that either the first egg entering the boiling water, or possibly the electroded egg, in effect, notified the other nine eggs of impending danger, causing them to go into a defensive state, the equivalent of fainting. Each of additional experiment runs encountered a similar problem.

Now, I could have redesigned this experiment, and left longer intervals between the egg drops, but previous observations with other life forms going insensitive suggested a recovery time of up to 20 minutes. With the existing experiment design I had no way of stopping the water from completely boiling away in the deep-fryer by the time all the eggs would be dropped using much longer intervals. Although I put this experiment on hold, I did learn something from those initial attempts, including the possibility that the eggs were in some manner communicating with each other.

AFRICAN VIOLET RESPONDING TO EGG

It is interesting that in the past I could not successfully monitor African violets with the GSR instrumentation. I attributed this to the electrical



current in the GSR circuitry being placed through the leaf causing the plant to go into that insensitive state already discussed. But later, with the EEG circuitry, I was able to get a tracing from a newly acquired African violet, but only one time with that same plant (fig. 5-1). During that one occasion the EEG tracing seemed fairly stable. Then, all I did was make a decision to break egg #59, the next in line during my then current period of experimentation with chicken eggs. I wasn't touching egg #59, it was just there with a pencil mark "59" on it. When I made that decision, up went the recording pen indicating a reaction from the African violet, possibly emanating from the soon-to-be broken egg. I don't attribute the reaction to any emotion emanating from me, as I had previously broken many eggs when feeding my Doberman. When I broke egg number #59 no additional chart reaction occurred. Here again, this egg appeared to have gone insensitive. By the way, after the single productive session, that same African violet would not bloom again for more than two years.

It would appear that the reason for this example of insensitivity, similar to "fainting," relates to giv-

Figure 5-1 - African Violet
 Monitoring Chicken Egg

ing notification of one's intent to do something that could be damaging, hurtful, or uncomfortable to the biological entity being monitored. In addition to those examples already discussed in prior chapters involving plants, we can also observe with eggs a similar kind of temporary insensitivity. In Eastern philosophies, there are frequent references to a "oneness," involving a capability to communicate, on a need to communicate basis, among most all living things. Some suggest this to be the origin of the blessing, practiced by many, in effect giving notice before ingesting food on the table.

NOTE:

1. On the hand printed data on Fig. 5D, 5F and 5H the 10/GAIN notation indicates that the electro-cardiograph (EKG) circuitry of the module was being utilized while on Fig 5E and 5I, the 100/GAIN notation indicates that the electroencephalograph (EEG) module circuitry was in use.

CHAPTER SIX

Tuning In to Live Bacteria

My first awareness of yogurt demonstrating primary perception was when I was using the tone generator described in chapter 2 for monitoring the reactivity of a plant located in the room next to the lab office area.

Having worked late that night, I was hungry. I took a carton of yogurt out of the refrigerator and started to stir the strawberry jam up from the bottom. The tone generator immediately became activated, indicating a plant reaction. I'd often eaten yogurt in the lab and the stirring process certainly was not one that I personally was excited about. Because of the precise timing I knew that the plant was picking something up. I had no idea what.

I said to myself, "Wow, something strange is going on with this yogurt." At that time, I wasn't even aware that there were live bacteria in yogurt. This started another new avenue of inquiry. After locating a book on dairy bacteriology I found that there are primarily two kinds of friendly live bacteria in yogurt, *streptococcus thermophilus* and *lactobacillus bulgaricus*. As I later reflected on that



Figure 6A – Commercially Available Yogurt

original yogurt observation, perhaps the sugar in the strawberry jam then being mixed with the yogurt was a nutrient for the bacteria, or perhaps there was a preservative in the strawberry jam that was interacting. I then decided to use plain yogurt for further investigation, which would eliminate the fruit flavoring as an unnecessary variable (*fig. 6A*).

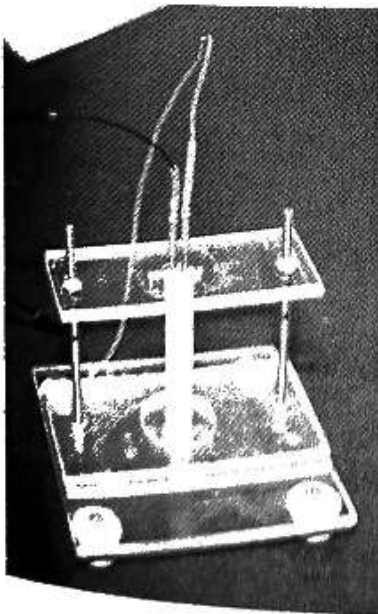
ELECTRODING THE YOGURT

I then developed a method for recording electrical activity from a test tube of yogurt. First I attached a 3-inch piece of plastic tubing to a 10 ml. medical syringe and drew a supply of yogurt up into that syringe. By then inserting the plastic tubing to the bottom of a 5 ml. test tube the yogurt could be loaded from the bottom upward, avoiding the problem of trapped air. It is important that all of the items involved in the electroding of the yogurt be sterilized in advance. This involves the 10 ml. medical syringe, the 5 ml. test tube, and the gold wire electrodes. The plastic tube to be fastened to the syringe should be boiled in distilled water as conventional autoclaving will melt the plastic.

Now came the choice of instrumentation. One cannot use GSR instrumentation as the GSR circuit passes electricity through the electrodes and will start to break down the yogurt's moisture into gases causing bubbles to form and be released on the inserted metal electrodes. This in turn will cause an unstable GSR tracing. The problem is avoided by using EEG-type instrumentation already described in chapter 5. Although originally using silver, I later changed to gold wire electrodes.¹ Also, I constructed a plexiglass stand to firmly hold the electroded yogurt in place (*fig. 6B*).

In expanding my observations into the area of primary perception to include bacteria, I've found yogurt to be a real break-through. You don't have to

Figure 6B – Electrode Configuration for Use with Yogurt



worry about unhealthy cultures. Plain yogurt, in a healthy condition, is sold as a food and is easily available.

From the very beginning the results were amazing. The bacteria in yogurt seemed very attuned to human interaction in the immediate area. I have since generated numerous hours of EEG-type yogurt chart activity. It seems that even the imaging connected with human thought activity will produce chart reactions just prior to the associated words being spoken. Also of interest, on frequent occasions I have been able to observe chart recordings from an electroded yogurt sample at the very time that I fed nutrients to a second sample of yogurt that was not electroded. Both samples were obtained from the same container, but were located at least ten feet apart. It was as if the electroded sample was also expecting to be fed.

I'll return to my research with bacteria shortly, but first some information on a lab relocation. Our polygraph school and the research foundation lab moved from New York City to San Diego in August of 1974.² For a space lease period of three years the lab was located in a long, narrow, single-story, wooden building about seven blocks from its present downtown location. The polygraph school was in an adjacent building. In this lab space the instrumentation console containing the GSR, EKG and EEG modules, along with the associated chart drive and its ink recording pens, were all located in a large front room where demonstrations were made for visiting individuals and small groups.

Illustrated in figures 6C and 6D is the instrument configuration in that front room. The importance of not watching the actuated chart recording is illustrated. Figure 6C shows the instrumentation with the chart recording exposed. In Figure 6D an opaque screen is in place, blocking the view of the actuated chart recording, enhancing the spontaneity of conversations. The video tape was then replayed and



Figure 6C -
Unobstructed Chart
Tracing

Figure 6D -
Blocked View of
Chart Tracing

the chart recording checked for significant reactions.

Also, I had installed a push-button type electric switch in each room of the lab, these switches being wired into an electric marking pen on the chart drive of the instrumentation at the very front of the lab. Rather than having to return to the front room



to mark the chart recording at significant times, I merely activated the closest switch. A signal would then activate the pen marker on the instrument's moving chart. In using this system I had no advance expectation that anything significant was occurring on the chart recording.

FRIENDLY BACTERIA VS. UNFRIENDLY BACTERIA

My Siamese cat, Sam, mentioned in the last chapter, was "hooked" on roasted chicken, and would eat nothing else—at least he had me convinced of that. My polygraph business partner's wife, Mary Ann Henson, would roast a whole chicken and send it in to the lab with her husband, Bob Henson. I would strip some chicken off each day to feed Sam, then return the increasingly mutilated carcass to the lab refrigerator. Incidentally, after about a week, the chicken carcass had gotten pretty aged, so there was an ever multiplying build-up of unfriendly bacteria.

These unfriendly bacteria proved very important as a remote stimulus in a fascinating research session in January of 1976. I had electroded a sample of plain yogurt for routine monitoring. It occurred to me that it was past the usual time to feed Sam his evening meal. Using the newly installed remote chart marking system, I actuated a nearby switch as I removed the somewhat aged chicken carcass from the refrigerator, four rooms away from the EEG instrumentation, and I started to strip the chicken into his dish. I again actuated the switch as I finished stripping the chicken and placed the pieces under a heating lamp.

I routinely used this lamp to bring the cold chicken to room temperature. I continued to actuate the switch, first after stirring the unheated chicken from the bottom of the dish before again placing the dish under the heating lamp. The last switch actua-

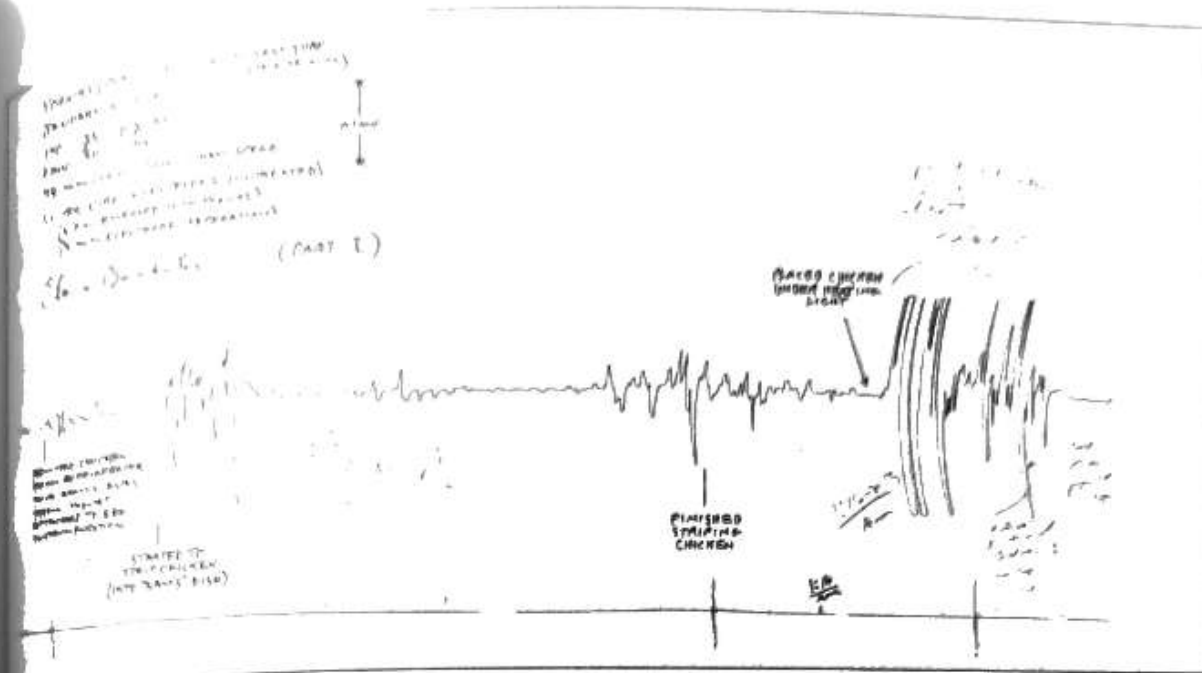
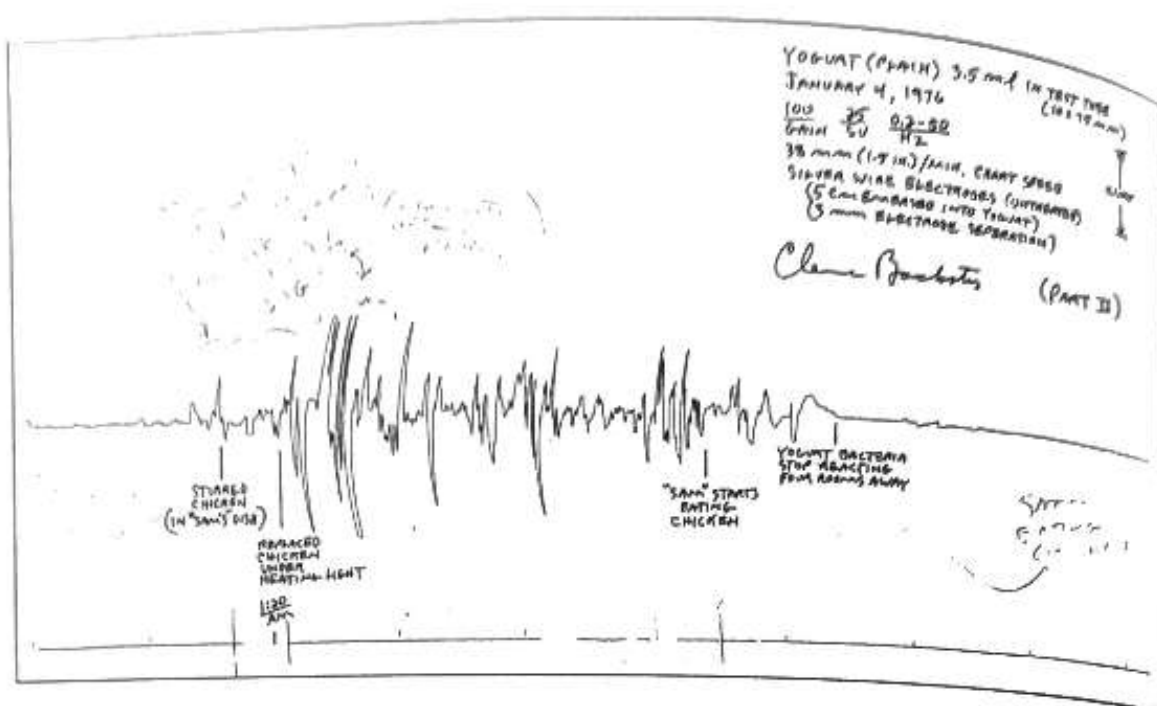


Figure 6E - Friendly Bacteria
Reacting to Agitation of
Unfriendly Bacteria

tion marked the time I set the dish on the floor and Sam started to eat his dinner. Then I returned to the instrumentation and reviewed the EEG chart tracing, identifying each event associated with the remote switch activated chart markings. At the very time I stripped pieces off the chicken carcass into Sam's dish, prior to placing it under the heating lamp, the friendly yogurt bacteria several rooms away at the front of the lab were showing chart reactions. I also noticed large yogurt bacteria reactions when the chicken pieces were placed underneath the heating lamp, apparently endangering the unfriendly bacteria (*fig. 6E*).

Reactions again occurred after I turned the pieces over, so the cold chicken on the bottom of the dish would be close to the top, and again placed the dish under the heating lamp (*fig. 6F*). Notice the tracing going absolutely straight, nothing more occurring once Sam started to consume the chicken. When the first of the unfriendly bacteria hit the digestive juices of the cat, which are very strong, these bacteria appear to have sent out a signal to the remaining unfriendly bacteria, causing them to go into a defensive state, again equivalent to fainting. This is similar to the eggs in chapter 5. To me this



overall observation demonstrates an interesting primary perception allowing for biocommunication between friendly and unfriendly bacteria. Aside from providing a fascinating spontaneous observation, I later found, as a matter of convenience, the best way to maintain Sam's chicken supply was to strip the entire chicken in advance and separate the pieces into small containers. Those daily portions were then stored in the lab freezer.

Toward the end of our 1974-1977 three-year school and lab leases we found a relocation opportunity difficult to ignore. The U. S. Government's Drug Enforcement Agency (DEA) had recently vacated their 2000 square foot lab location in downtown San Diego to move closer to the Mexican border. Upon moving they left behind all permanent lab facilities including sinks, counters, storage drawers, lots of electrical outlets, and a fume hood exhausting air from the fifth floor lab to the roof of the eight-story building. The lab space was available on a square footage basis - with all of the mentioned facilities included. Because of the uniqueness of the opportunity, in 1977 we moved the research foundation laboratory to this location, leasing the entire space.³ There was also plenty of space available in

Figure 6F - Friendly Bacteria Continue to React to Agitation of Unfriendly Bacteria

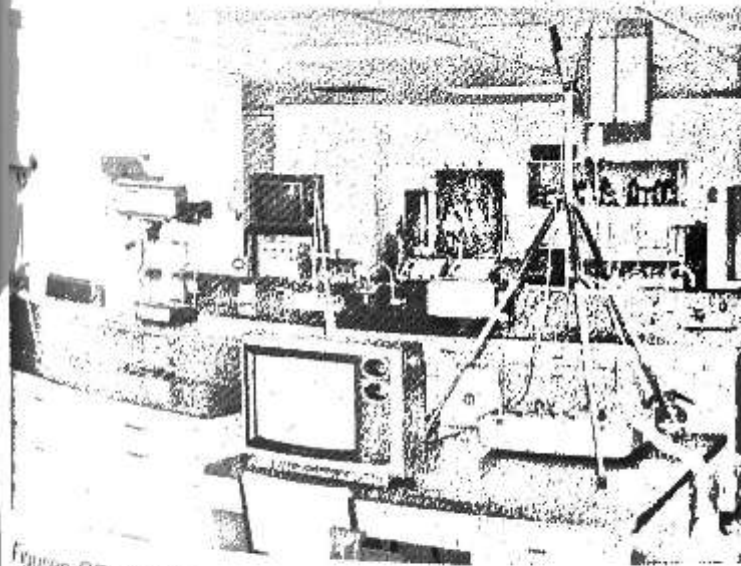
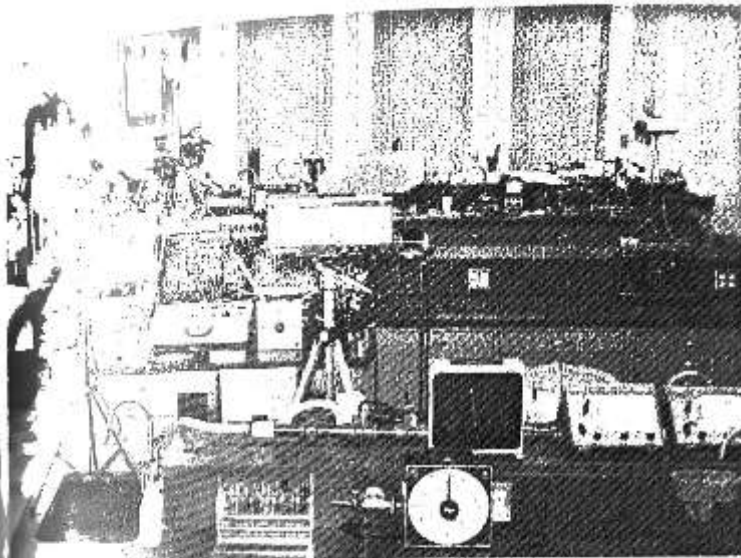
the same building for the polygraph school. Figures 6G and 6H are photographs of this new laboratory space after our occupancy.

FRIENDLY BACTERIA VS. VODKA AND TONIC

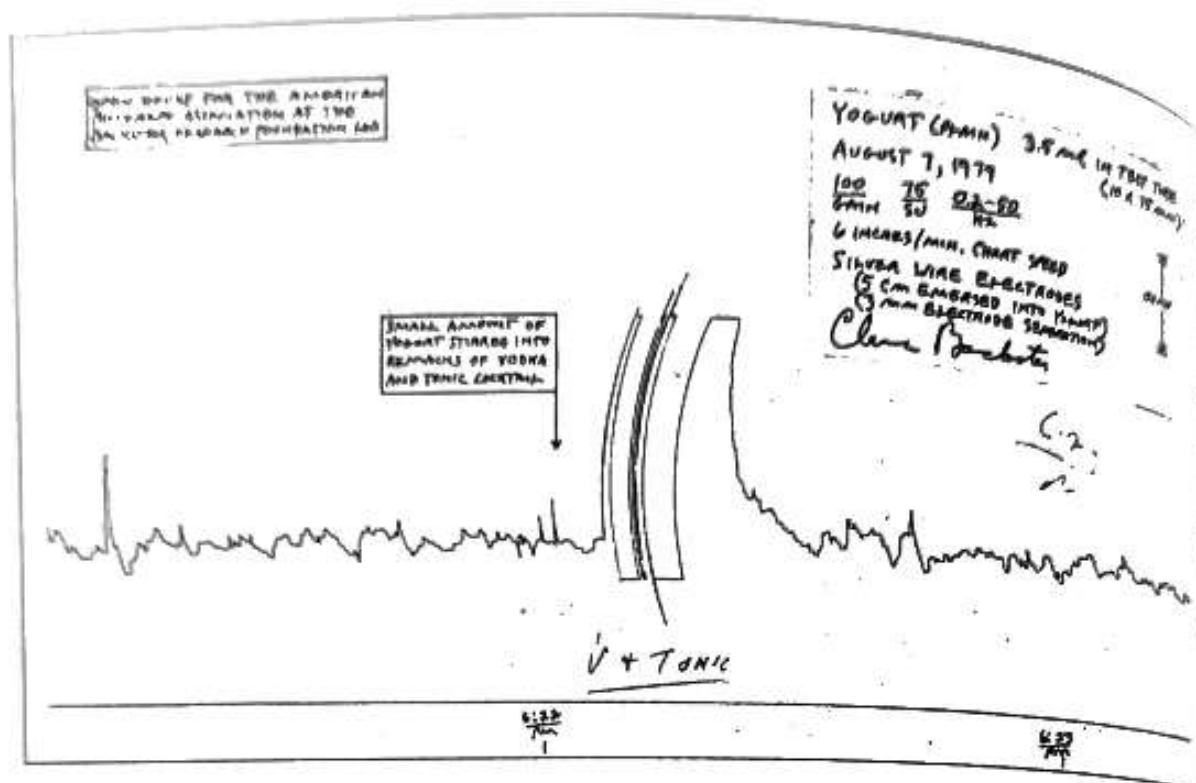
In 1979 the American Polygraph Association had chosen San Diego for the site of their annual seminar.

The Backster School of Lie Detection sponsored an open house involving our classroom, then located on the second floor and the Backster Research Foundation lab, on the fifth floor. We had set up a bar at both locations. In addition to a large group of visitors on the second floor there were about 150 at the fifth floor lab location. Before the crowd started to arrive I had electroded some plain yogurt, although I expected to get chaotic chart readings because of the rather hectic conditions. Ordinarily we conduct our experiments in a very controlled environment, but here I only hoped to be able to provide a demonstration of basic yogurt reactivity. Most all the guests, predominantly private and

law enforcement polygraph examiners, along with wives and friends, were engaged in their own small group conversations. We had provided buses to



Figures 6G and 6H - San Diego Laboratory Views



transport them from their hotel so there was no need for them to be conservative in their drinking. Because of the crowded conditions there was no opportunity for any organized attempt to provide a guided lab tour. I was standing about fifteen feet away from that previously electroded yogurt sample, but observed that the tracing was fairly calm. This surprised me and, despite my immobility, I wanted to attempt to stimulate a chart reaction for the benefit of those standing close by.

I had within reach the syringe that I had used for inserting the yogurt into the test tube that was now electroded, and there was some yogurt remaining in it. Also, there was a mixed drink glass sitting nearby, the remains of a vodka and tonic. I thought, let me squirt some of the yogurt from the syringe into that glass. There was no direct connection, no conventional connection between the yogurt in that syringe and the electroded yogurt sample fifteen feet away. Upon squirting and stirring the yogurt into the drink I first witnessed two small spikes on the chart recording when the yogurt hit the mixed

Figure 64 - Yogurt Reacting to Vodka and Tonic

drink. Then, about five seconds later, I observed a huge reaction (*fig. 6-I*).

I don't know if it was the vodka or the tonic that caused the now immersed yogurt to provide a timely remote stimulus to the electroded yogurt. What surprised me, in the midst of all this noise and turmoil, was that the electroded yogurt reacted at all.

EVIDENCE OF PRIORITIZING

I found it extremely interesting that that yogurt bacteria exhibited an apparent capability to prioritize. As a parallel capability within humans, the currently more popular polygraph technique that I helped to refine for the polygraph profession around 1960, is based upon the prioritizing of the human mind toward either the fear of being detected lying on the crime-related relevant questions or, if being truthful to those questions, having the capability of reacting to minor deception deliberately prompted by comparison questions. This technique is based upon the well-established concept with humans of the flow of "psychological set," or mental prioritizing. The concept with humans is also referred to as "selective attention."⁴

Here I was finding, even at the bacterial level, there appeared to also exist a system for prioritizing! I had always assumed that a controlled environment was needed to properly isolate meaningful biocommunication reactions. But in the figure 6I example I had a laboratory full of people engaged in numerous separate conversations. In spite of the chaos, the electroded yogurt sample appeared to be tuning in to the yogurt immersed in the vodka and tonic drink, even though located fifteen feet away. This suggests that there is a primary perception process, equivalent to "psychological set" in humans, but on a bacterial level.

STEVE WHITE JOINS THE RESEARCH

In 1979, Steve White, then an undergraduate student at San Diego State University, came in to the Backster School of Lie Detection classroom as a poorly-paid volunteer to be tested by student polygraph examiners during their routine practice sessions. When I found that he had a major in biology I invited him from the second floor polygraph school to the fifth floor research foundation lab to acquaint him with the scope of my in-progress research.

Starting October 21, 1979 Steve joined the Backster Research Foundation on a part-time basis (*figure 6J*). Although already indoctrinated by conventional science to the point of being quite skeptical, he also was intent on paying for his own college education. The foundation was able to continue employing Steve part-time through the end of 1993.⁵

Both Steve and I became increasingly curious regarding how widespread biocommunication capability was with other types of bacteria. It occurred to Steve that aquarium gravel accumulates large amounts of bacteria. In pursuing this avenue of inquiry his college emphasis in marine biology was a big help. At that time we had assembled quite a collection of fresh-water and salt-water aquariums (*fig. 6K*).

We developed a method for electroding the bacteria by taking gravel from the bottom of one of the large aquariums, putting a sample in a 5 ml. test tube, and inserting gold wire electrodes into the bacteria-coated gravel. The resulting EEG type tracings seemed very responsive. As I had often done with plants on prior occasions, we left the instru-

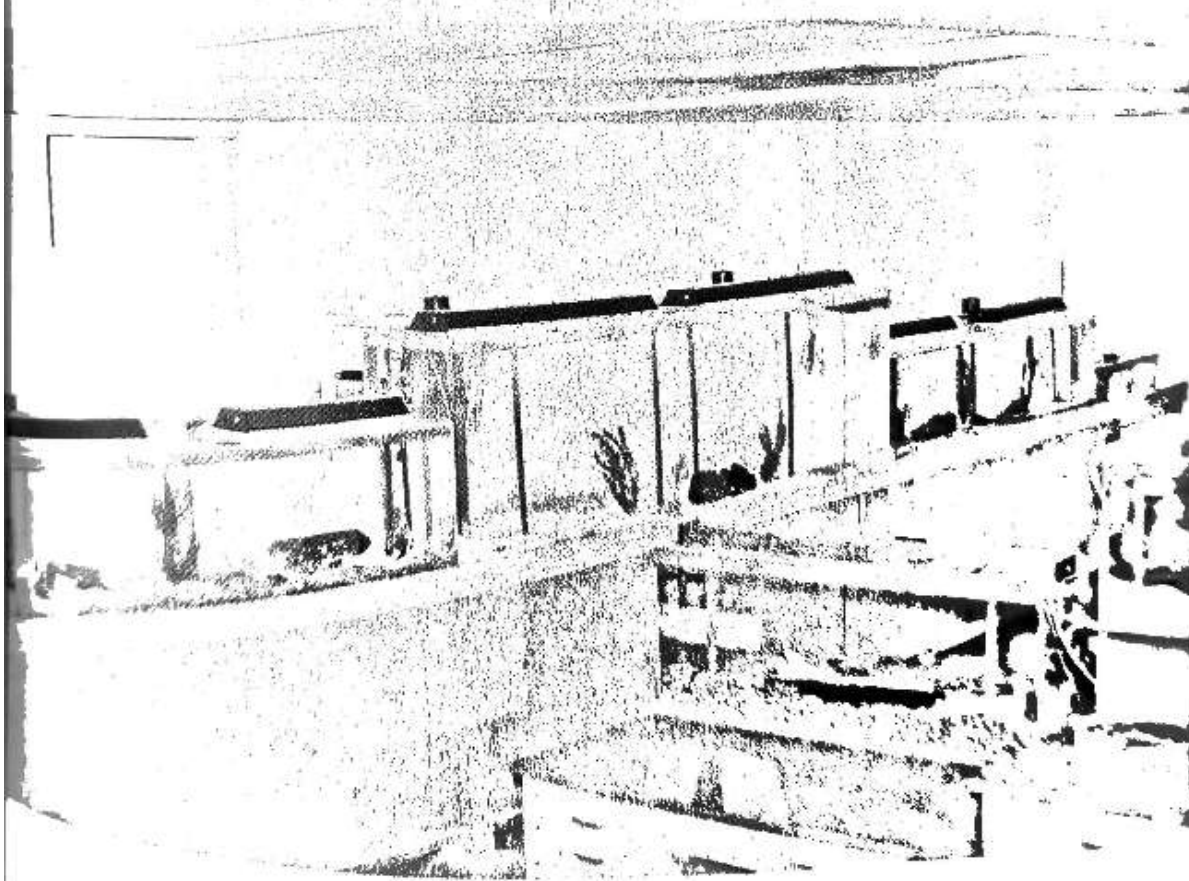


Figure 6J - Steve White at Work in the Lab

mentation turned on as we went about routine lab chores, with no specific expectations. Feeder fish were kept in a small aquarium at the opposite end of the lab from the instrumentation. These were food for the larger forms of marine life in several of our salt water aquariums.

A high quality spontaneous observation occurred when it was time to feed the large fish occupying the same aquarium where the bacteria-coated gravel had been collected for electroding. When taking a net and dipping it into the small feeder fish aquarium the feeder fish most always became very agitated, possibly anticipating their fate. That's quite understandable, but the interesting part occurred while I was visually monitoring the electroded bacteria. To economize on chart paper, our more casual visual monitoring was done by viewing the activity of an un-inked instrumentation recording pen. On this occasion, as Steve dipped the net into the feeder fish tank at the far end of the

Figure 6K - Collection of
aquariums at Time of Gravel
Bacteria Observations

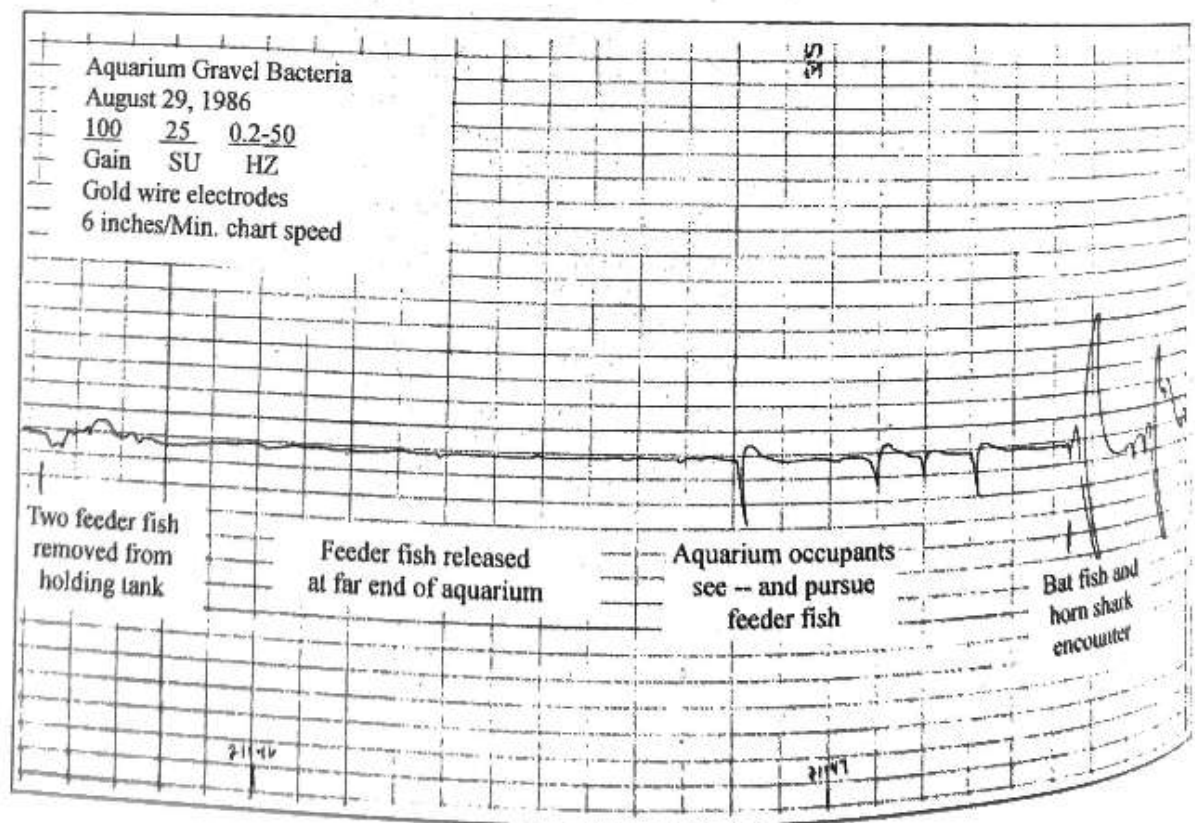


lab, at the other end of the lab at a distance of approximately thirty feet, I observed sizeable pen movement indicating strong reactions from the electroded bacteria. This appeared to be an additional primary perception example of other forms of bacteria being very aware of their environment.

Encouraged by this preliminary visual observation, later that evening I inked up the EEG recording pen and recorded electroded gravel bacteria for a forty-five minute session. During this period a number of dramatic bacteria reactions were noted, particularly involving aquarium life encounters between a horn shark, a bat fish, and two feeder fish that were released in their aquarium (*fig. 6L*).

Another form of bacteria that we electroded was a DH1 strain of *E. Coli*, cultured in our lab by some grad students from the University of California, San Diego. Our first recorded session of the newly cultured *E. Coli* was on July 13, 1992. The electroded sample seemed to show a sensitivity to a conversation we were having. The first part of the conversa-

Figure 6L - Aquarium Bacteria and Bat Fish-Horn Shark Encounter



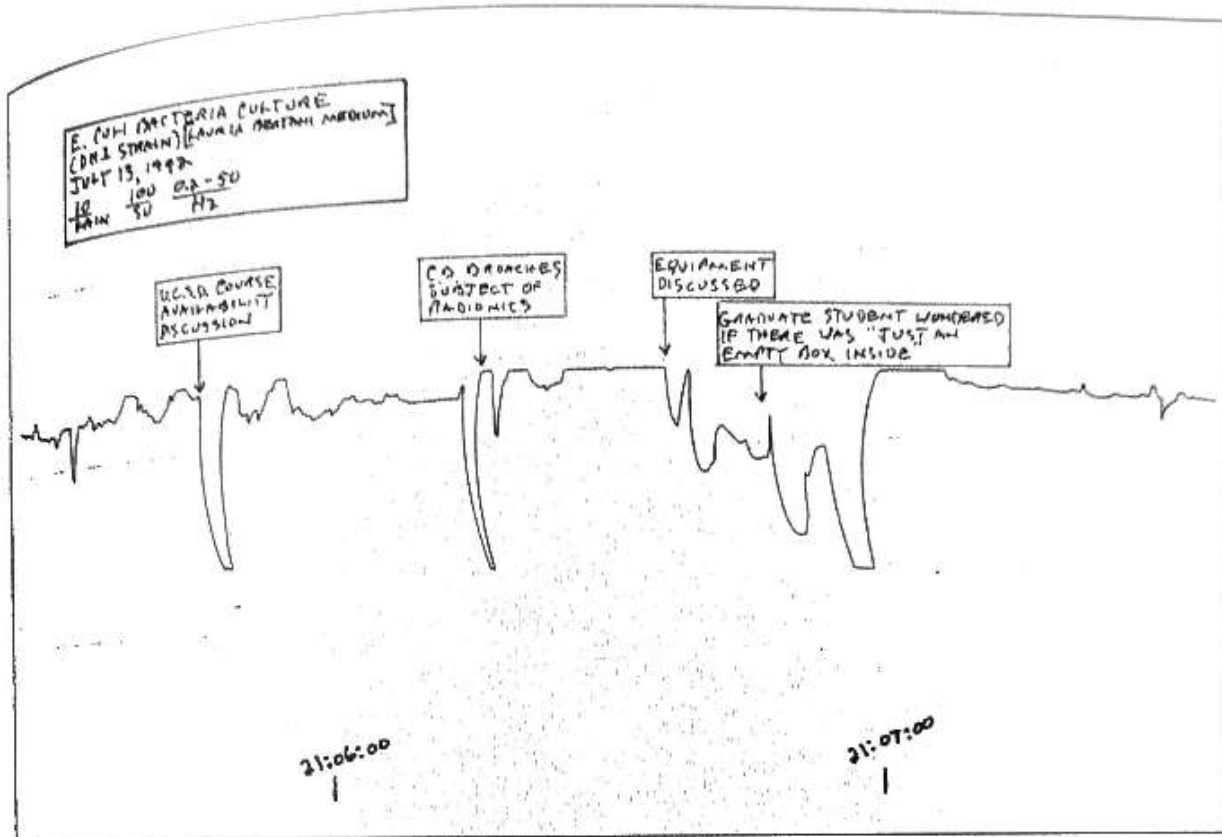


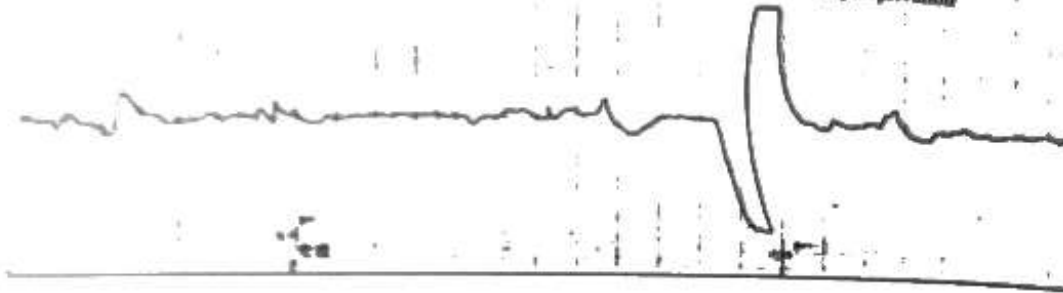
Figure 6M – E. Coli Bacteria Tracing

tion involved the UCSD course availability, concerning which the students were expressing disappointment over certain courses they could not obtain. Then I broached the subject of radionics in an attempt to stimulate a reaction. We discussed the equipment used in this somewhat controversial field. One of the students wondered if there was "just an empty box inside," referring to the radionics instrument case. On each of the noted occasions, the *E. Coli* tracing uniquely displayed most of its initial reactivity in a downward direction (fig. 6M). Additional work needs to be done, using proper safeguards, with other strains of *E. Coli*.

KOMBUCHA TEA

It was during 1996 that I first became acquainted with Kombucha, a health-related beverage, which is fermented from a mushroom-like composite, said to

Movie dialogue between characters -
Patrick Stewart and Julia Roberts -
alleging CIA experiments with
hallucinogens and sensory deprivation



be part lichen, part *Bacterium xylinum*, and part natural yeast culture. The nutrient used in the process is a mixture of white sugar and black tea. When the "mushroom" is floated upon this mixture for 7-10 days it produces a reportedly healthy brew which is then consumed in small doses. In searching the literature I found that Kombucha is said to have been traced back 2,000 years in Asian countries. It is also reported to contain a large number of enzymes and nutrients that many claim are important for good health. I became further intrigued when I read statements in more popular type literature that seemed to personalize the relationship between Kombucha and its users—such as, it should be given away, never sold, and if you talk to it nicely you will get a better beverage. Some users claim that it is also sensitive to negativity in the environment. Such assertions fired up my curiosity. Though my earlier electroding of the Kombucha culture tended to verify a primary perception capability similar to that experienced with yogurt, it was not until preparing material for this book that I decided to conduct a better structured experiment.

Figure 6N -
Kombucha
Culture Tracing

While alone in the lab, with the exception of Libby and Leo, my two Siamese feline residents, I electroded a 5 ml. test tube of the culture solids from a just matured batch of Kombucha. While the EEG type instrument chart drive was recording, I watched on television the last half of a 1997 movie entitled *Conspiracy Theory*, with Mel Gibson and Julia Roberts. I had not previously viewed the movie. Among other interesting reactions, at 4:06 p.m., a large reaction can be observed, just as I heard certain references during a conversation between the characters portrayed by Julia Roberts and Patrick Stewart (fig. 6N). These references concerned alleged experiments by the CIA with hallucinogens and sensory deprivation. Noting my past employment with CIA, I'll leave it to the "conspiracy theory" experts to interpret the electroded Kombucha's reaction.

YOGURT REACTS TO ANTIBIOTIC

For the past seven years I have been part of the resident faculty at the California Institute for Human Science located in Encinitas, twenty miles north of San Diego. Members of the adjunct faculty at this State of California accredited school include Dr. Stanley Krippner, Dr. Alexander Dubrov, and Dr. John Alexander, all mentioned in other chapters.⁶ In 1996 a class that was taking my course on biocommunication was on a field trip to our San Diego lab. Such field trips allowed the students to have more "hands on" experience using the lab facility.

On that particular evening, I was demonstrating electroded yogurt reactivity while class members were engaged in a discussion about what each of them might do to create a good remote stimulus in some future project of their own involving human cells isolated from their donor. (this is covered in

chapter 7.) The conversation went on for a while, with one student relating with animation what she could do. She would go up in a helicopter while her electroded *in vitro* cells were in the lab on the ground, and would expect large reactions since she is so afraid of flying. There was a mild reaction from the electroded yogurt during that part of her imagined story when she related her fear. As often experienced, the electroded yogurt appeared to be reflecting human emotionality within the group interaction.

When the group discussion got a bit disorganized, I remembered I had on hand a capsule of ampicillin trihydrate, a type of penicillin. It occurred to me that this antibiotic, when ingested, is used to kill bacteria, unfortunately both unfriendly and friendly bacteria. While the group continued talking, I withdrew to the back of the lab and found the capsule. I opened the capsule, placing some of its content on

Figure 6-0 -
Antibiotic Stirred
into Non-electroded
Yogurt





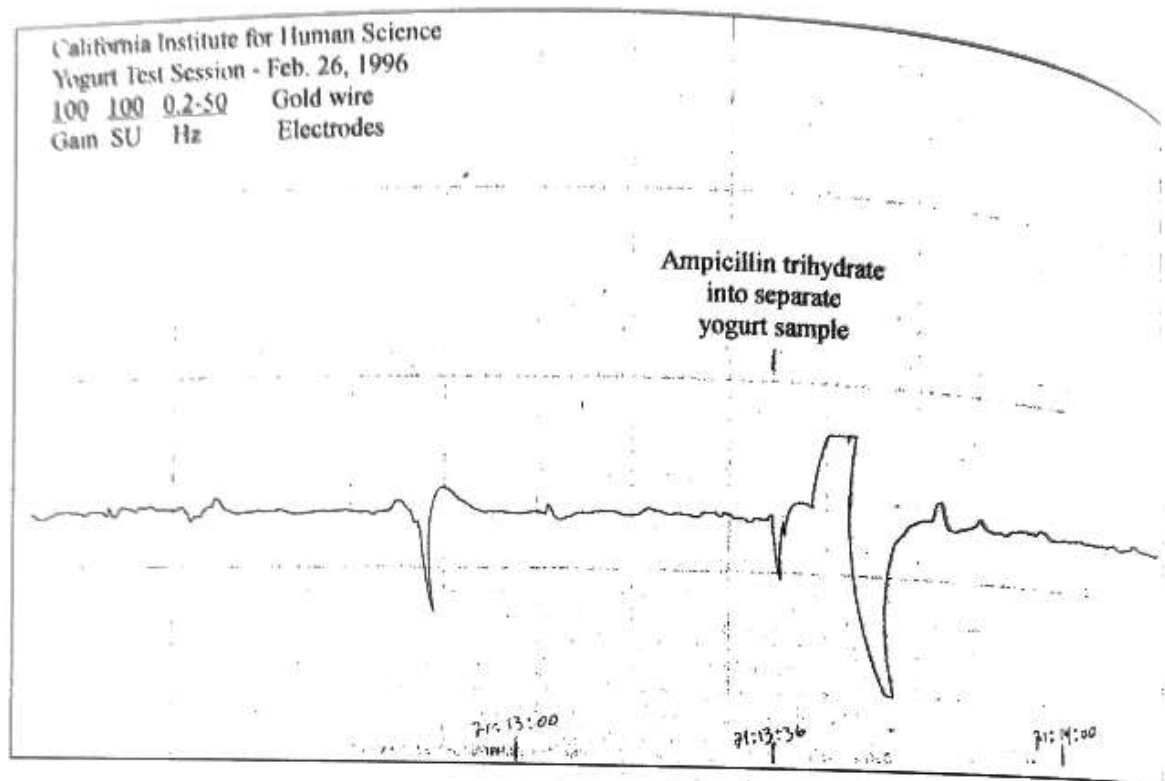
Figure 6P -
Electroded Yogurt
Reacting to
Antibiotic

a lab spatula. Without the class being aware of what I was doing I placed in a beaker some yogurt from the same source as the electroded yogurt. I held the beaker in front of the video camera, which was recording the group discussion and dumped the powder into the yogurt (*fig. 6-O*).

As the ampicillin began to affect the yogurt bacteria in the beaker there was a huge reaction from the electroded yogurt. This whole event was recorded on split screen video (*fig. 6P*). The class was not expecting the event nor was I at all sure anything would happen. It was truly a productive observation. Also note chart tracing (*fig. 6-Q*).

It seems appropriate to include the following comment from Elisabet Sahtouris, an evolutionary biologist:

"Bacteria are responsible for forming the larger cells from which all other life kingdoms are constituted. Further, bacteria are the only creatures that



could survive without all the others. Why should bacteria not think, if they could think, that the world is all theirs?"⁷

Figure 6Q - Tracing of Yogurt Reacting to Antibiotic

NOTES:

1. For those interested, the reason for switching from silver to gold wire electrodes involved the interaction of the electrical signals generated by the bacteria with the moisture in the yogurt sample, producing a silver-silver chloride coating of the silver wire electrodes. As silver-silver chloride is a bacteriacide, this produced noisy tracings because of the interaction of the silver-silver chloride and the yogurt bacteria.

2. Back in 1974, the New York City Times Square area, in which both the school and research foundation were located, had not yet undertaken the rejuvenation process later accomplished during the terms of the recent mayor, Rudy Guillianí. At that time, a move seemed in order and San Diego was selected as the new location for our polygraph school. We had a national school following and my school partner, Bob Henson, had relatives in the San Diego area. Also, I'd been stationed in San Diego for a brief period during my World War II service in the U. S. Navy. The move was

made in August, 1974. We both considered San Diego to be an ideal location.

3. In 1977 the entire space previously occupied by the DEA was rented at a somewhat modest amount. It has increased four-fold over the past 25 years, at times creating significant hardships because of inadequate available funding.

4. James Allan Matte, and Robert Nelson Grove in the Volume 30, No. 3, 2001 issue of Polygraph Journal, published the definitive article for those interested in learning more about "Psychological Set."

5. The first ten of Steve White's fourteen years of part-time employment at Backster Research Foundation was made possible through modest although welcome funding from Evelyn Leonard, a long time personal friend. In addition to sporadic help from volunteers, Steve was the first and only employee on the Backster Research Foundation payroll, even though on a part time basis. During earlier portions of this book I have been somewhat self-conscious because of the constant need to use "I" and "me" in describing most of the research activity. Thankfully I can now more often use "we" as during the following fourteen years Steve remained very active in most all of the research activity.

6. The California Institute for Human Science Graduate School and Research Center was founded ten years ago by Hiroshi Motoyama, Ph.D., Lit.D, who still serves as its president. The Institute, within the framework of state approved degree programs, provides graduate level education and training in the disciplines of Life Physics, Psychology, Comparative Religion, and Philosophy.

7. Elisabeth Sahtouris - *Earth Dance: Living Systems in Evolution*, iUniverse.com Inc. 2000.

CHAPTER SEVEN

From Animal Cells to Human Cells

Having obtained such meaningful examples of primary perception suggesting a biocommunication capability in plants, chicken eggs and a variety of bacteria, I became curious about the possibility that a similar capability might exist in humans at the cellular level. With *in vivo*, or in-body testing, when cells are part of a person's more complex organs, there would be too many alternate explanations that could account for reactions credited to overall nervous system activity. It seemed that such problems could be eliminated by electroding human cell samples separated from the body and placed in test tubes, so-called *in vitro* cells.

Remembering my plant recording observations (see chapter 2) relating to human cells appearing to exhibit communication capability when flushed from the body during the use of rest room facilities, I became curious concerning a practical source for collecting a human cell sample for *in vitro* testing.

I discussed possible options with Dr. Howard Miller, a New Jersey cytologist, who had become interested in my work with plants and had com-

mented about my research in a *Medical World News* article¹ stating that I "may have discovered a kind of cellular consciousness." Dr. Miller and I agreed that the utilization of leukocytes from human blood might be most interesting because of their important function as part of the human immune system. Also, their use would not entail specialized knowledge and the experience required when incubating human cell cultures. I could see that a remaining problem would be that of having supervision by a medical doctor during the necessary whole blood collection and the white cell separation. Because of the cumbersome nature of this proposed arrangement, my work with *in vitro* human cells was temporarily delayed.

In the interim period I did some fairly primitive observations electroding cell scrapings from my mouth using GSR instrumentation. These cell scrapings had a very short life span, but did provide observations positive enough to further my interest in continuing *in vitro* human cell experimentation.

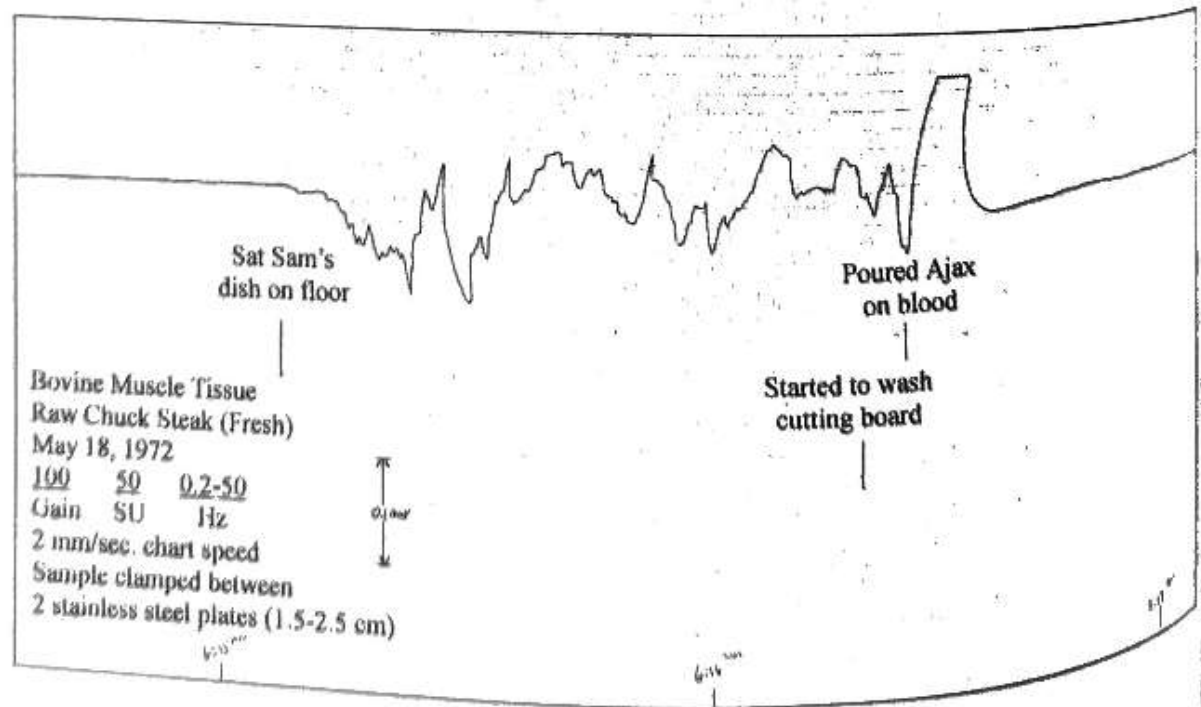
As mentioned in chapter 5, during March, 1972 I had received delivery of my EKG and EEG instrumentation. Also early in 1972 I had accepted an invitation to lecture before the Sigma Xi Honor Society at the Bowman Gray School of Medicine, part of Lake Forest University in Winston Salem, North Carolina. I made my presentation on May 4, 1972 before a group primarily composed of medical doctors. I not only reviewed my past research as of that date but then, having just received appropriate instrumentation, I also speculated on the potential importance of expanding my research to explore possible primary perception at the cellular level in humans. Following that presentation I asked the person responsible for my invitation what the group's reaction had been. I was initially dismayed when he told me about 50% of those attending thought I might be crazy. He quickly added that he thought this was good news as he fully expected

that all of them would feel that way. For that group, he added, my presentation was a great success.

Two weeks following my return from the Bowman Gray School of Medicine, and still not having worked out a practical solution relating to a source of human cells, it occurred to me that I might be able to make interim observations by electroding *in vitro* animal cells. During the period of May 18 to 22 of 1972 I worked first with bovine muscle tissue in the form of fresh beefsteak. I speculated that I should be able to get some reactions from an electroded sample, similar to what I expected to observe with a living cell culture. I had previously divided the beefsteak into two portions and froze one of the portions. With a sample from the unfrozen portion clamped between two electrode plates, using EEG instrumentation located two rooms away, I was able to make some very interesting observations.

Although I was able to observe a number of reactions on the EEG chart tracing, I believe that the best documented examples occurred when I placed a diced sample of the raw beef, from the same source as the electroded sample, in a dish on the lab floor. This was for my Siamese cat, Sam. The EEG tracing

Figure 7A - Bovine Muscle Tissue, Raw



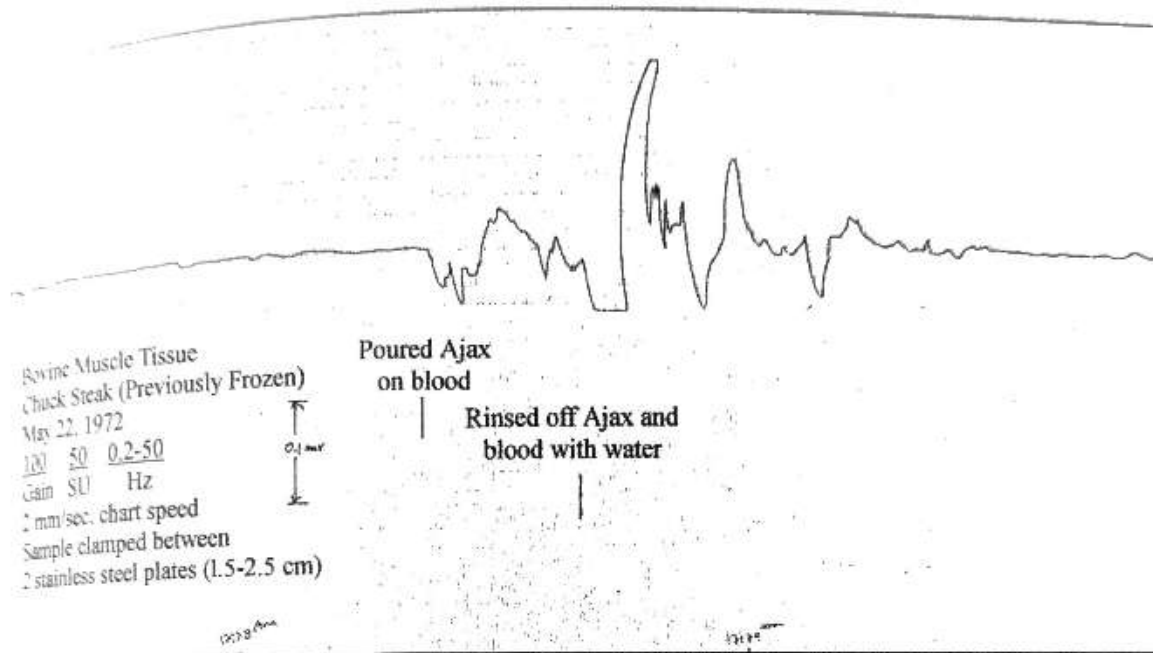


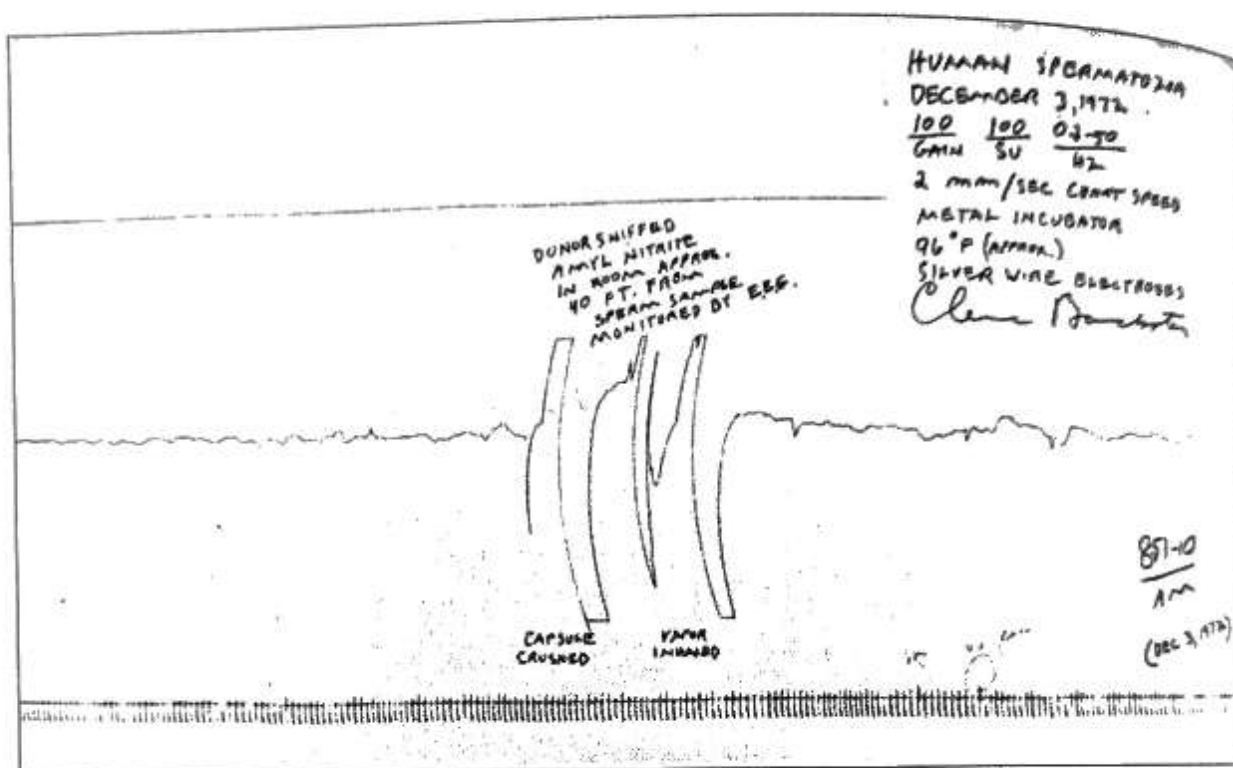
Figure 7B - Bovine
Muscle Tissue,
Previously Frozen

which had been fairly calm for several prior minutes, showed extensive activity as the diced beef was being consumed (fig. 7A). The highlight of that overall session occurred as I started to wash the cutting board used to dice the steak, specifically the moment I poured some Ajax cleanser on the blood that was still on the board.

Three days later I thawed out the frozen portion of the beef set aside prior to the session already described. I was quite curious regarding the effect that freezing would have on the sample's reactivity. Among a number of interesting reactions, about half way through this two hour session, a dramatic reaction occurred when I again poured Ajax onto blood from the previously frozen sample (fig. 7B). It was apparent that the prior freezing did not impair its biocommunication capability.

EARLY RESEARCH WITH HUMAN CELLS

Witnessing the ease in obtaining meaningful reactions from *in vitro* animal cell tissue, I was even more anxious to work with human cells isolated



from their donor. It occurred to me that human spermatozoa could possibly be electroded using EEG type instrumentation. If successful I would be obtaining a group reaction from thousands of sperm. In May of 1972, I made some preliminary observations of electroded sperm samples, but did not refine the methodology until later that year. This was accomplished by inserting silver wire electrodes into a 5 ml. test tube containing a sample of the donor's sperm.

Figure 7C is the chart tracing of a human sperm sample located three rooms away, about forty feet from its donor. The initial reaction occurred when the sperm donor crushed a capsule of amyl nitrate and the fumes and liquid content encountered the donor's thumb and first finger. The second burst of reactivity occurred when the donor inhaled the fumes from the amyl nitrate capsule. The conventional medical use of amyl nitrate is for dilating one's blood vessels during a period of heightened blood pressure, reducing the possibility of strokes.

After the move to San Diego, there were other

Figure 7C - Human Spermatozoa Reacting to Remotely Located Donor

interruptions in the human cell research, one being my January 1975 participation in the New York City AAAS meeting already discussed in chapter 4, followed by a period of activity stimulated by that event.

The following two years primarily involved discussions, articles, and lectures on the earlier work with plants, eggs, and bacteria. This activity included the production by the British Broadcasting Corp. of a documentary entitled "The Green Machine," distributed in the United States by PBS as a Nova program. The program included a twenty minute segment on my primary perception research. It was not until 1977 that I got back on track with the human cell research.

A DOOR OPENS

In July of 1977, Charles and Irma Hooks, who lived just outside of Houston Texas, had invited several scientists to their home to speak to a group of houseguests. Along with parapsychologist Bill Roll, Charles and Irma, having visited my San Diego lab on a prior occasion, invited me to be one of those attending. Also in the group were Hal Puthoff, later well-known for his remote viewing research at Stanford Research Institute, and Raymond Moody, who had written a book on near-death experiences entitled *Life After Life*. Aside from enjoying listening to the others, I was about to learn something of great importance to my research. One of the house guests was James Klinkhammer, D.M.D., a dental researcher at the University of Texas School of Dentistry, located there in Houston. As the evening progressed, I discussed with Dr. Klinkhammer the problem I was having obtaining human cells for my research using collection procedures not requiring medical supervision. Dr. Klinkhammer was then developing a method for detecting various kinds of

gum disorders, including gingivitis, which involved the collection of oral leukocytes, also referred to as "white cells." He had noticed that his computer count of the number of leukocytes collected during a set period of time was affected by short term emotional changes experienced by the cell donor during the collection period. He immediately recognized a possible connection with my cellular biocommunication research.

Following the evening meeting at the Hooks residence, Dr. Klinkhammer drove me to downtown Houston, opened up his lab at the university and demonstrated his procedure for collecting white cells from the donor's mouth. He walked me through the required steps, gave me reprints of articles he had authored on his research, and acquainted me with the necessary equipment. With this valuable information I would, at last, be able to collect human cells using a non-intrusive procedure.

When I returned to my San Diego lab, I ordered a centrifuge, which was part of the necessary equipment for the white cell separation not already in my lab (*fig. 7D*).

The following month after receiving the centrifuge, I practiced the procedure by first collecting my own white cells.

Dr. Klinkhammer's cell collection instructions required 12 test tubes, each containing 10 ml. of a 1.2% saline solution. Each 10 ml. sample was to be munched in the mouth for 30 seconds, then placed into 1 of 12 heavy duty 15 ml. centrifuge test tubes. These twelve test tubes were then to be rapidly spun in the centrifuge to draw the white cells to the bottom of each test tube. The cells are then collected

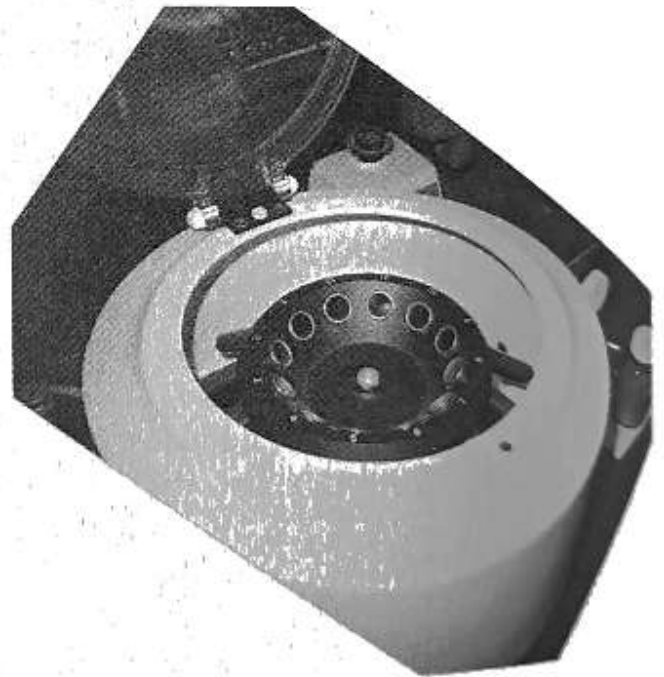
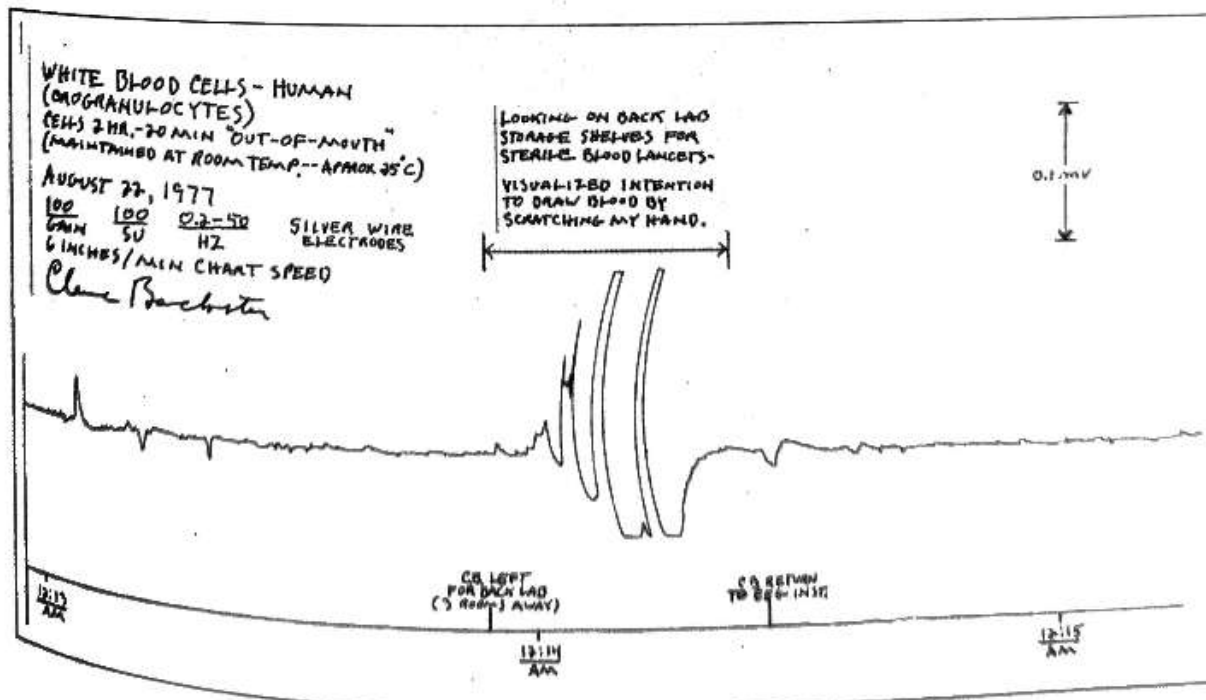


Figure 7D - Centrifuge Used for Oral Leukocyte Collection

with an extended eye dropper. Here I departed from Dr. Klinkhammer's procedure. He would then stain the cells and do a computer count of the number of cells collected. As I wanted the cells to remain alive I would transfer the cells to a small 1 ml. test tube and insert gold wire electrodes into that test tube. The electrodes were then connected to the EEG type instrumentation.

After receiving my centrifuge, I quickly followed the procedure and I was able to collect my own white cells, electrode those cells, and go through a period of observation. One interesting part was when I had a sudden intention to inflict a small cut on the back of my hand and put some iodine in the cut. I'd often gotten reactions from the plants when I'd accidentally cut my hand and put alcohol or iodine in the cut. I went to search for a sterile lancet on a nearby shelf, visualizing its intended use. When I returned to the instrumentation and glanced at the chart, it already had shown intense reactions during my search for the lancet and the iodine (fig. 7E). When I actually made a small cut on my hand and applied some iodine, no timely chart reaction

Figure 7E - Oral
Leukocytes Reacting to
Donor's Intent



occurred. Because of the pre-planning, the cells on the back of my hand appeared to have been sufficiently notified and assumed a protective insensitivity, similar to prior observations of egg and bacteria chart recordings (see chapters 5 and 6).

THE POWER OF A PICTURE

On June 30, 1980 I let Steve White, now working regularly in the lab on a part time basis, collect his own oral leukocytes using the Klinkhammer procedure. Somehow we got into a discussion about an article in *Playboy* magazine, an interview with William Shockley, a scientist who was somewhat controversial at the time. I told Steve that I thought my school partner, Bob Henson, had that issue of *Playboy* downstairs in his school office desk and volunteered to go get it. I found the issue under discussion and brought it up to the lab. By this time Steve had finished the cell collection procedure and had electroded his own cells.

Then I aimed one video camera, which was mounted on a tripod, over Steve's shoulder to allow for later correlation of that which he was viewing. Another video camera was mounted over the in-progress chart recording. The two video camera images were then combined through split-screen technology. This assured that there would be an accurate record of the timing of possible reactions. His electroded oral leukocytes were in a screen cage located about fifteen feet away.

As Steve leafed through the *Playboy* magazine to find the Shockley interview article he got to pages 112-113 where he encountered the centerfold featuring Bo Derek in her nothingness. Even though he said out loud, "I don't think she's a 10," his *in vitro* white cells showed full scale reaction hitting the top and bottom limit stops on the chart recorder. (See figure 7F.)

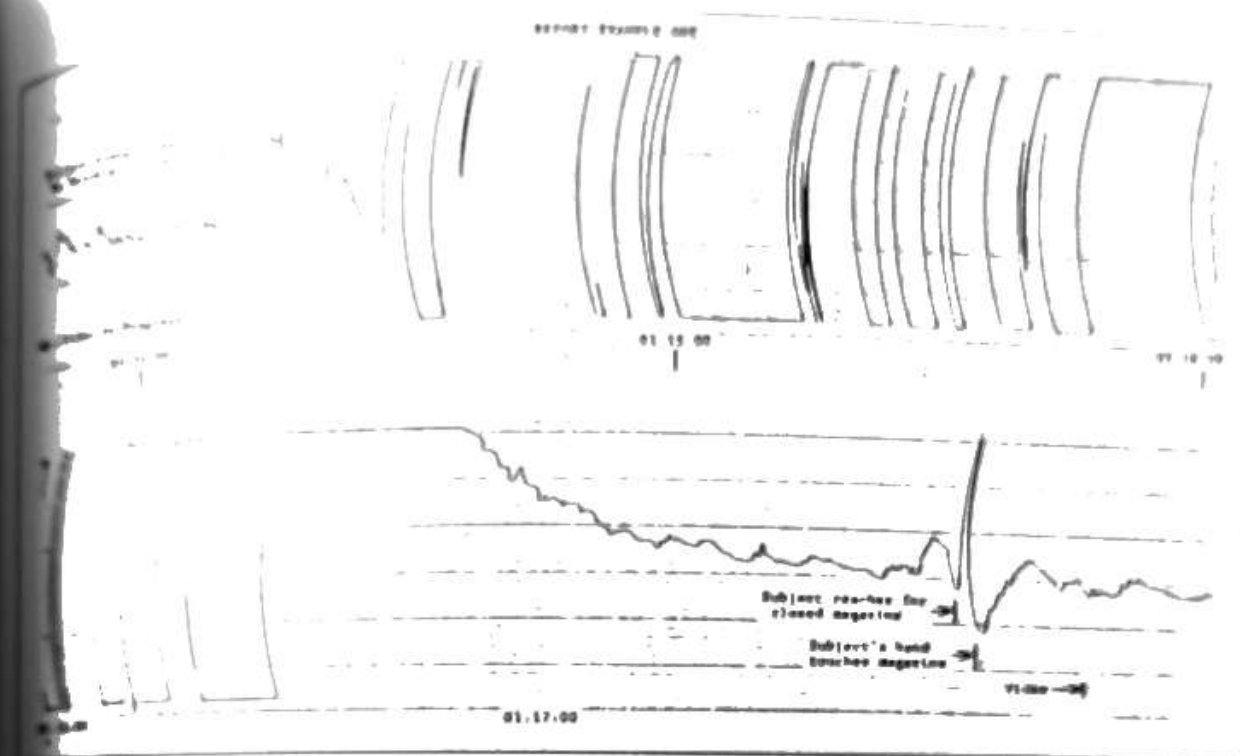
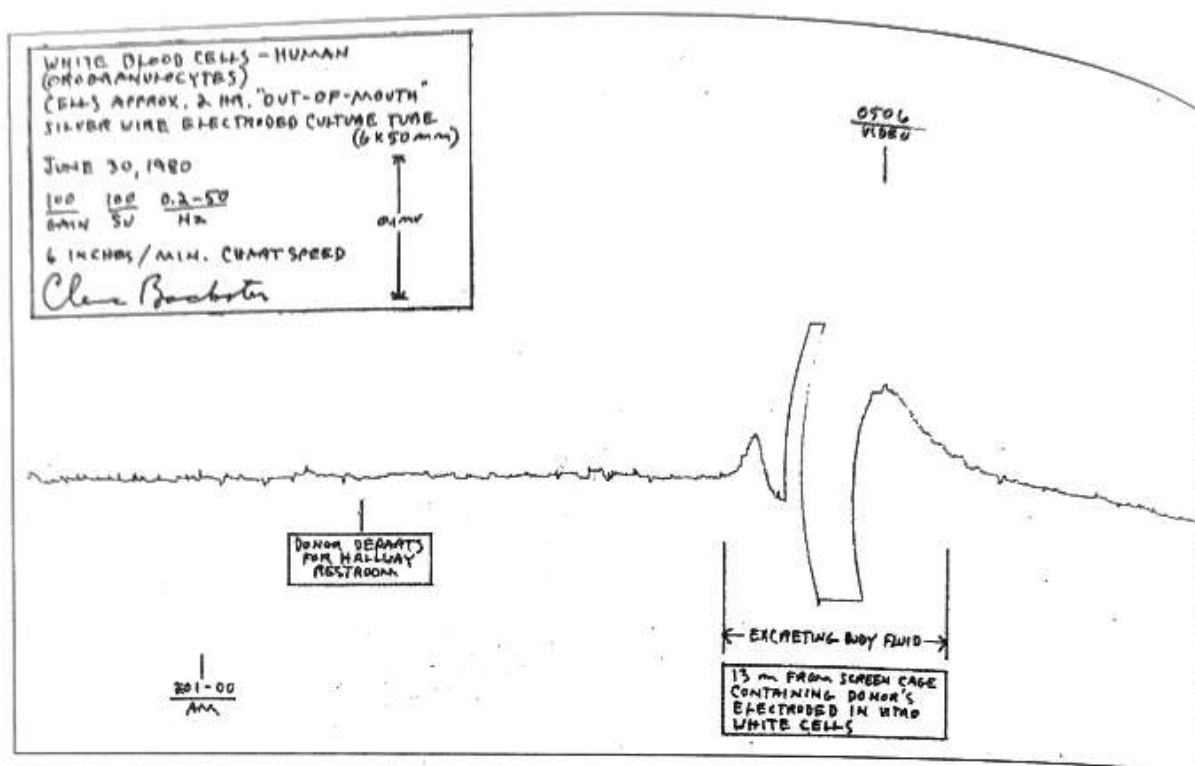


Figure 7F - Oral Leukocytes
Reacting to Donor's Visual
Stimulation

After two full minutes of continuous reactivity, I suggested that he close the magazine. When Steve closed the magazine his electroded cells calmed down as he attempted a process of mental disassociation. Then, a minute later, when he reached over to again open the closed magazine, the cells spiked again. When Steve experienced this high quality observation, knowing his feelings and the thoughts of his own mind, it was the end of any raw skepticism about our research. To him it was a very revealing experience!

As previously mentioned, I had suspected for some time that a person's *in vitro* cells would react to the injury or death of other types of cells from that same cell donor. Later in the same cell recording session described above, Steve excused himself to go to the bathroom which was down the hall a short distance away on the same floor. Unknown to him, as he left the lab I marked the chart, and I thought, "let's see what happens when he uses the restroom facilities." During his absence a large reaction appeared on the chart. (See fig. 7G). When he came back, I was waiting for him at the lab door



with a stop watch in hand. I asked him to start the stop watch and walk back to the bathroom at about the same pace as before. He was instructed to stop the watch just as he was standing in front of the urinal. When he returned with the stop watch, we transferred the indicated time to his chart recording. The large chart reaction was within one or two seconds of the transferred time.

Here again, his electroded white cells in the lab appeared to be picking up the termination of the living cells being expelled from his body, being exposed to air and the urinal disinfectant.

Figure 7G - Oral Leukocytes
Reacting to Death of
Donor's Cells

AN INTELLIGENCE AGENCY'S REPLICATION

A long time friend, Col. John Alexander, while employed as Chief of Advanced Human Technology at the U.S. Army Intelligence and Security Command, arranged for the head of that agency, Major General Burt Stubblebine, to visit our San Diego lab in January of 1983. Included in the group accompa-

nying the General was Col. Alexander and Dr. Edwin Speakman, the agency's science advisor. The visit included a demonstration of biocommunication capability in plants and also human cells *in vitro*. During March of 1983 personnel from that agency made additional visits to our San Diego lab. In July of 1983, I spent several days working with John Alexander at their agency's Washington, D.C. area headquarters checking the assembled equipment needed for their replication of our work with human cells *in vitro*. The replication was successful and it was during this period that high-quality observations were made of human cell biocommunication over a distance of twelve miles. Less structured observations involved a distance in excess of fifty miles.

Early in 1985, in addition to Steve White, our lab personnel was supplemented by the volunteer efforts of Jon Speller. Much earlier in New York City, Jon had been very helpful in the preparation of our first published biocommunication report, *Evidence of a Primary Perception in Plant Life*. Some time later in 1985, Steve White, with the help of Jon Speller, co-authored a report with me entitled, *Biocommunications Capability: Human Donors and In Vitro Leukocytes*. We were asked to submit the report to the refereed International Journal of Biosocial Research. As there was a connection between our research work with living cells (bio) and my background in the field of polygraph, (social) that Journal seemed appropriate. The report was accepted for publication.²

Prior to the report being published, we presented the material during my lecture at the Cosmos Club in Washington, D.C. By utilizing Jon Speller's contact with a retired Navy officer and club member, Captain Miles P. DuVal, famous for his writings on the Panama Canal, we were allowed the use of this prestigious club. Pictures of Nobel Prize laureates lined the walls of the foyer and Carl Sagan's

picture had great prominence. The audience was a hand-invited group of scientists and government employees from the Washington D.C. area. As part of the presentation we projected the videotape of each of the twelve examples of leukocyte test sessions featured in the published report. The presentation was well received, although I'm not certain that the Cosmos Club was prepared for the "cutting edge" nature of the research results presented on their premises.

Also in 1985, before the published report, I was invited to speak to the Ortho-Molecular Medical Society. My subject was "Biocommunication Interaction between Donor Leukocytes and Donor." Their membership includes medical doctors who also believe in utilizing vitamins and a better diet to aid in the healing of disease. Linus Pauling was on that same program. Being past my 60th birthday at the time, I mentioned during my presentation that I had been consuming natural vitamin E and vitamin C for years. I was feeling somewhat proud of my vitality until Linus Pauling reminded me that he had a son my age.

EXAMPLES FROM THE PUBLISHED REPORT

In addition to the Steve White *Playboy* magazine human cell session described earlier in this chapter, here are two other examples from the twelve published in the report, selected because of the distance between the donor and the electroded cell samples. All of the twelve report sessions involved Steve White for the oral leukocyte collection, with the voluntary help of Jon Speller during some sessions.

In figure 7H the leukocyte donor, located ten blocks from the lab, viewed a television program pre-selected as a possible source of visual stimuli. The program selected was an episode of "Hill Street

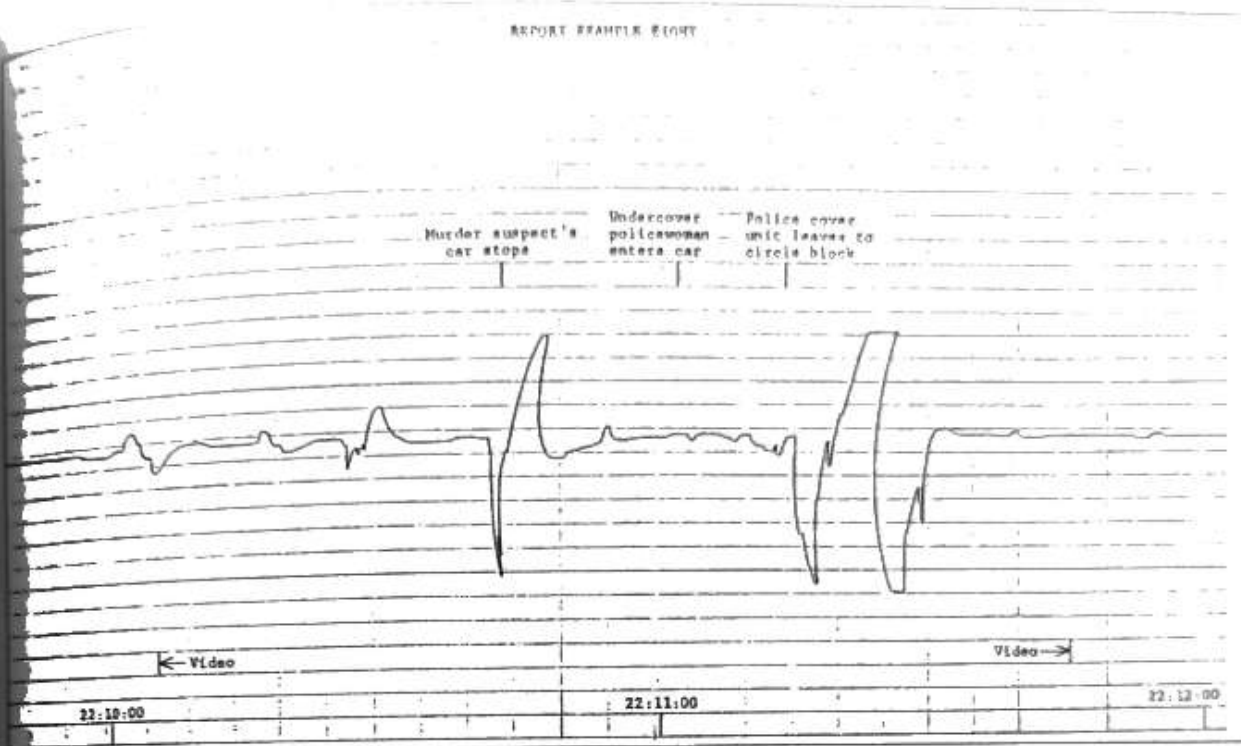
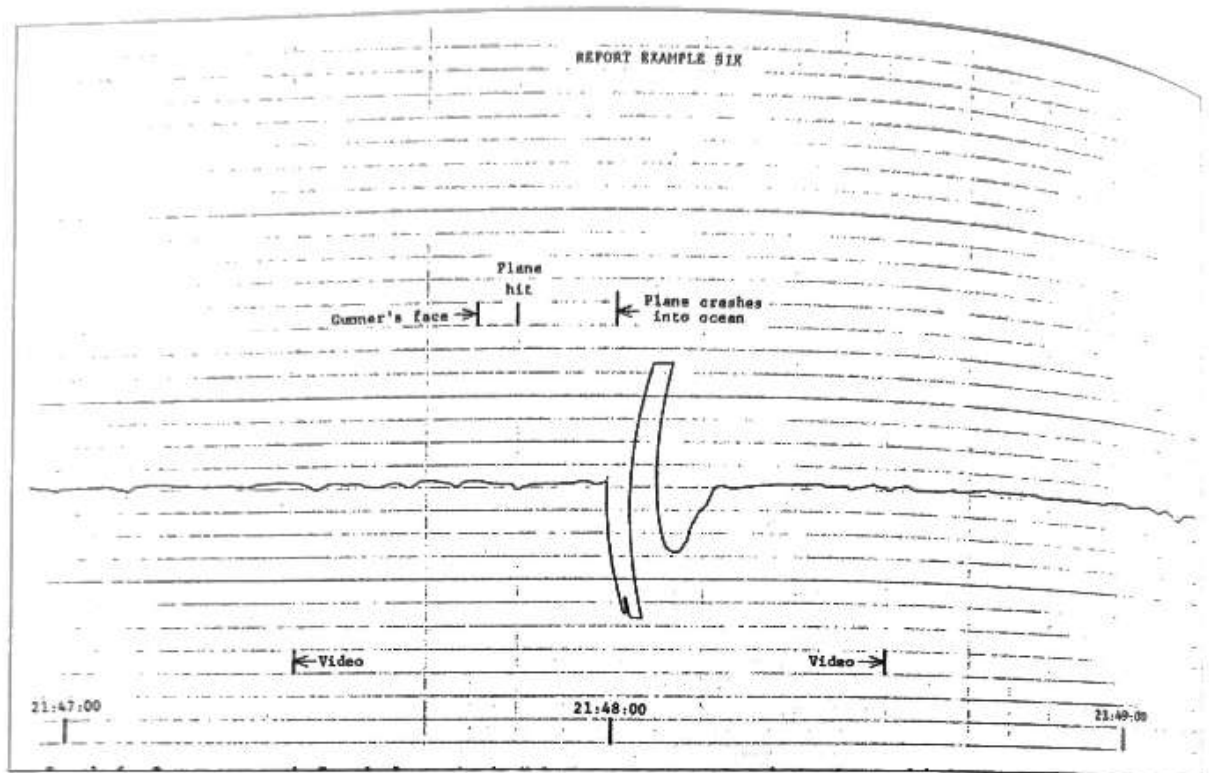


Figure 7H - Oral Leukocytes
Reacting to Donor Viewing
Undercover Policewoman
Scene

Blues." A scene early in the program depicted an undercover policewoman held captive in an automobile by a violent would-be rapist. The scene caused an emotional arousal in the female donor that was reflected in the tracing resulting from the monitoring of her *in vitro* white cells. In the post-session interview the donor disclosed that at age nineteen, she had had a similar experience herself, that of being trapped in an automobile by a would-be rapist. She stated that the memory of this had continued to evoke very strong emotionality even to this day.

In figure 7-I the leukocyte donor was in the U.S. Navy stationed at Pearl Harbor during the 1941 Japanese attack. He served as a gunner during his wartime Naval service. Donor watched at home a television program then being aired, entitled "The World at War." Following the only facial close-up of a naval gunner in action against the enemy aircraft, the donor's *in vitro* white cells in our lab reacted to the downing of the enemy aircraft. Donor did not react to all scenes of downing aircraft through naval gunfire, only when he projected his past wartime experience



into imagery. Donor was viewing the program in Chula Vista, approximately fifteen miles from the lab.

Images involving intense emotions are easier to spot than loving and kind interactions. In six of the report's white cell sessions, there are reactions to stimuli within the category of perceived life threatening situations. Two sessions involved sexual imagery; two involved emotionally charged family situations, and two sessions involved the category of rage.

During eight report examples, the donor was in our lab, five meters away from the electroded cells, while we had an in-lab discussion. In three examples donors watched a program on television at a distance of ten blocks away and in the one example, the donor was fifteen miles away from the lab. The electroded cells appear to register the donor's reaction just as dramatically even though watching the TV programs at a significant distance from our lab. It should be noted that all twelve examples in the published report are derived from the monitoring of *in vitro* white cells from seven different donors during seven different monitoring sessions. All high

Figure 7-1 - Oral Leukocytes Reacting to Donor Viewing War Scene

quality observations were from spontaneous events occurring during these sessions.

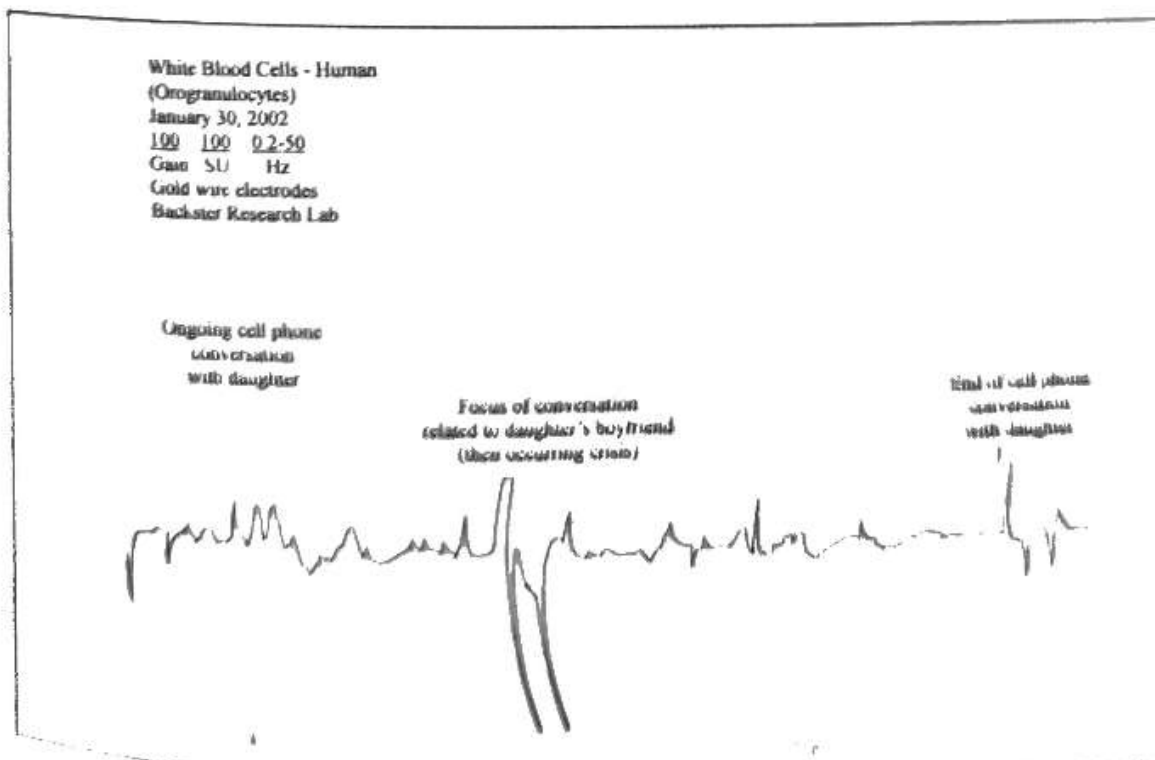
CONTINUATION OF HUMAN CELL RESEARCH

Since the 1985 published report, we have continued to conduct leukocyte testing to periodically demonstrate to interested researchers examples of the biocommunication capability of human cells *in vitro*.

In an attempt to keep the presentation of all human cell tracings confined to this chapter, following are two additional chart examples from a recent human leukocyte monitoring session. The donor involved in figures 7J and 7K is a research director, key to a planned expansion of our research in collaboration with the University of Alabama-Birmingham, and the Institute of HeartMath. Additional details relating to this will be presented toward the end of the chapter 8 research chronology.

This leukocyte donor is the mother of a college-age daughter who is located on the East coast. Dur-

Figure 7J - Oral
Leukocytes Reacting
to Donor Talking on
Cell Phone



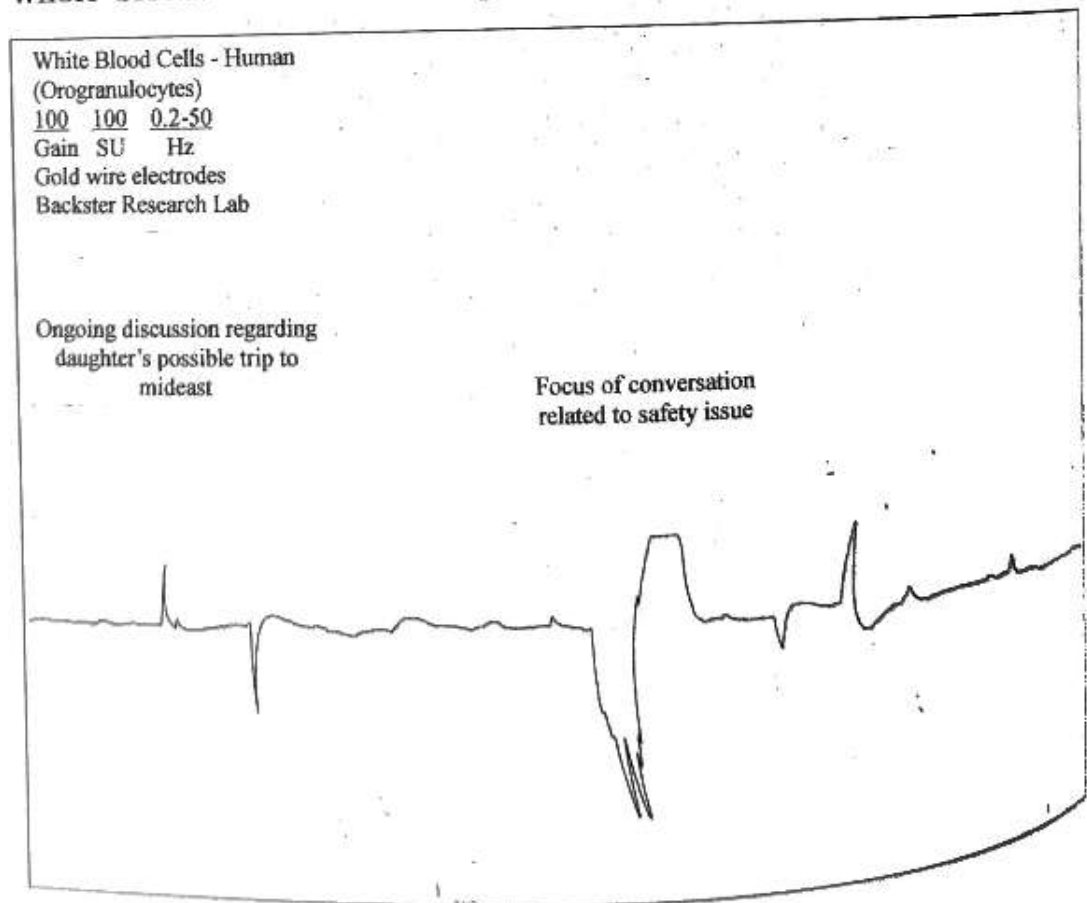
ing our research session the daughter had phoned her mother to share a crisis. That phone call was in progress at the start of the chart example in figure 7J.

Before the phone call the mother's chart had remained quite calm, reflecting her usually controlled composure. When the focus of the phone conversation turned to the daughter's boyfriend-related crisis, a significant reaction occurred. This event is typical of reactions easily obtained with a person engaged in a phone conversation, because of the spontaneity of the occasion.

The chart example in figure 7K follows the end of the mother-daughter telephone conversation. During this period the mother, with a bit of probing by trained agitators in our group, focused the conversation on her concern about the daughter's possible trip to Italy with her Israeli boyfriend.

The following two chart examples reflect an expansion of our human cell research to include whole blood. The donor in figures 7L and 7M is

Figure 7K - Oral
Leukocytes
Reacting to Donor
During Lab Converse-
tion



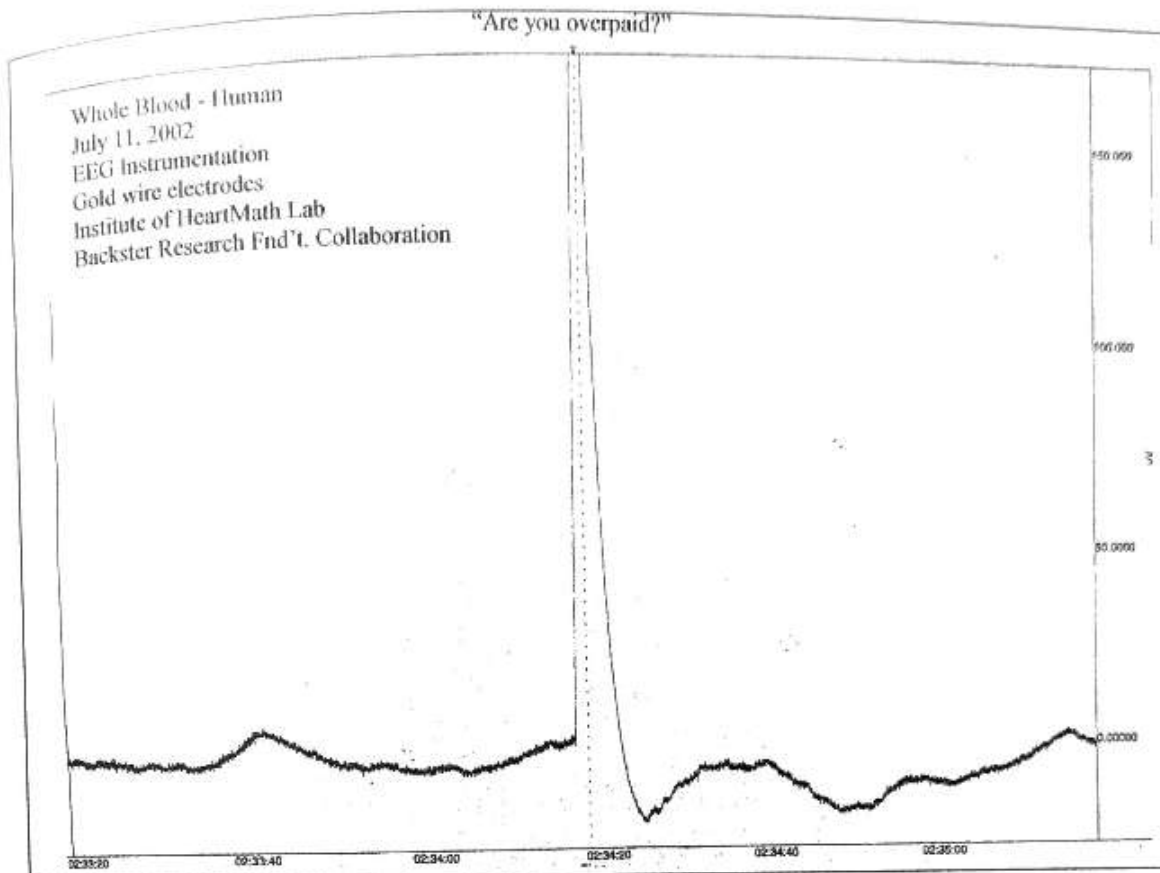
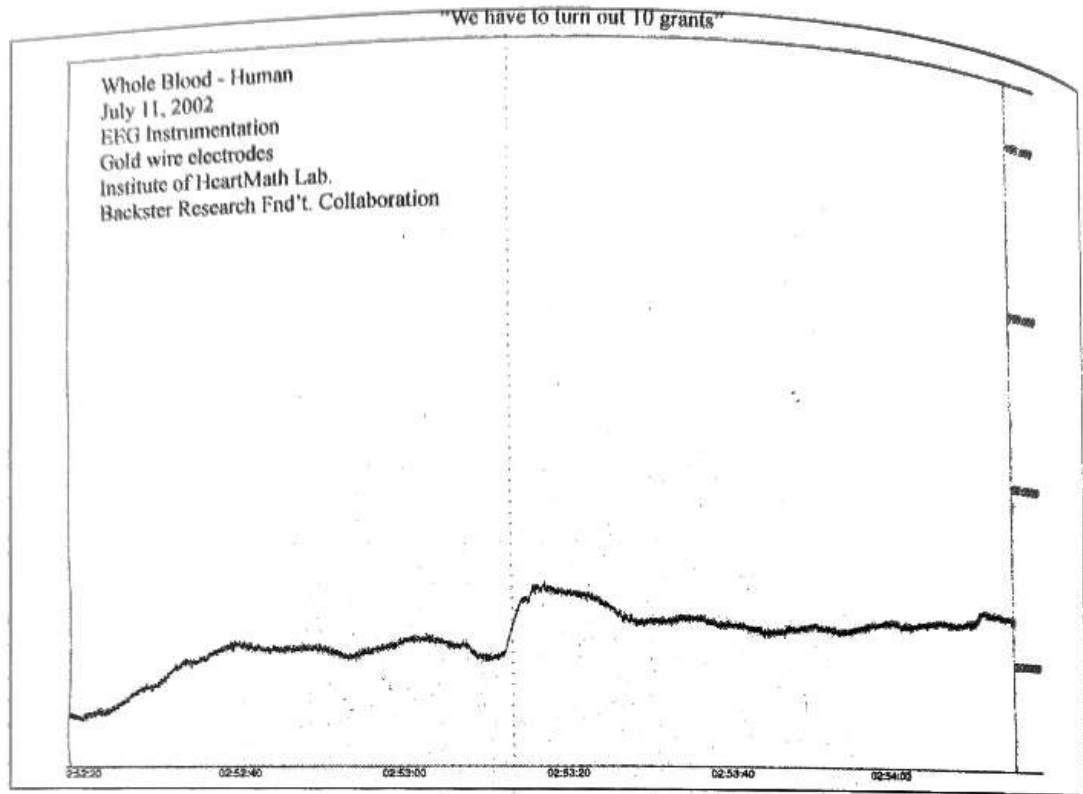


Figure 7L – Human Blood Reacting to Donor During Lab Conversation

involved as a research assistant in the University of Alabama's research collaboration. Gold wire electrodes were inserted into a 5 ml. test tube of blood. Then chart examples were collected in a joint research session conducted at the Institute of HeartMath Research Lab. Additional details are presented in chapter 8.

In figure 7L, the donor had mentioned during a prior conversation that he was presently living under a degree of financial pressure due to a past business-related disappointment. Suspecting that this pressure was possibly not being adequately addressed, and again being a trained agitator I asked him, "Are you overpaid?"

The donor's function at the University of Alabama as a research assistant involved helping to prepare research grant proposals that are extremely time consuming. The research director remarked to him, "when we return, we have to turn out ten grants." Note, in figure 7M, the whole blood reaction as she mentioned the waiting workload.



I am often asked if others have replicated my work. Accounts of replication by others who we have encouraged to work with human leukocytes were mentioned earlier in this chapter. Through the efforts of Col. John Alexander, then at the U.S. Army Intelligence and Security Command, my human cell research was successfully replicated. Through the team headed by Rollin McCraty at HeartMath Institute's laboratory, many examples of biocommunication have been observed. The more recent replication of the examples of white cell and whole blood biocommunication are also covered in the ongoing research-related chronology in chapter 8.

*Figure 7M -
Human Blood
Reacting to Donor
During Continued
Lab Conversation*

NOTES:

1. *Medical World News*, March 21, 1969. Article entitled: "ESP: More Science, Less Mysticism."
2. "Biocommunications Capability: Human Donors and *In Vitro* Leukocytes" by Cleve Backster and Stephen White, Backster Research Foundation, Inc. 1985. Published in the *International Journal of Biosocial Research*. Vol. 7 p.132-146

CHAPTER EIGHT

Biocommunication Research & Current Scientific Attitudes

*"A new scientific truth
does not triumph by
convincing its opponents
and making them see the
light, but rather because
its opponents eventually
die and the new genera-
tion grows up that's
familiar with it."*

— Max Planck

In accord with the expected practice, I have traveled widely throughout the United States to describe and exhibit to the scientific community documentation of high quality observations demonstrating biocommunication. This has been accomplished through continuing appearances before my peers, including a variety of prestigious scientific groups. Since the 1968 publication of the *Evidence of Primary Perception in Plant Life* report I have lectured extensively before scientific groups and the general public, including travel to eighteen foreign countries.

NEED FOR PARADIGM CHANGE

Obviously, this approach hasn't worked in terms of the research getting adequate thoughtful attention and triggering changes in laboratory procedures. And it isn't going to work in the foreseeable future unless something different is done to bring about this revolution in scientific thought.¹ From the comments of sociologists and historians who have

critically evaluated the scientific community, what I've encountered in terms of scientific inactivity is certainly not an isolated example.

The idea I have tried to project is that if you are doing consciousness research you may well be communicating your intent, which could alter the outcome of your experiment. The conventional planned research project, by design, has no spontaneity. I have found spontaneity to be a necessary ingredient for prompting meaningful evidence of the existence of a primary perception and the resulting biocommunication manifested.

Although a lot of people claim that they have replicated my experiments, they in all probability have repeated the capability to witness spontaneous examples of biocommunication at work. That's fine; it's one big step in the right direction. But unfortunately, it doesn't meet the prescribed repeatability requirements allowing for the accumulation of acceptable empirical data. It does indeed seem that the present day requirements of the scientific method really restrict one's success in truly understanding primary perception and the biocommunication phenomena.

REFLECTIONS

The last reflection presented in chapter 4 on initial reactions to primary perception and biocommunication research from scientists and the public was mostly restricted to my work with plants. Actually, this earlier work served as a vehicle pointing the way to similar communication capabilities appearing to be present at the cellular level in other forms of life such as eggs, bacteria and finally animals, to include cell samples separated from their human donors.

It now seems appropriate to update reactions particularly from the scientific establishment

through a series of events occurring during the sixteen years following the chapter 4 coverage.

COL. JOHN ALEXANDER AND THE NATIONAL RESEARCH COUNCIL

In 1986, as a result of the involvement of Col. John Alexander briefly mentioned in chapter 7, an unusual group visited our lab. They were members of the Committee on Techniques for the Enhancement of Human Performance, a fourteen-member committee formed by the National Research Council at the direction of the National Academy of Sciences, for the most part a group dominated by skeptics. A most curious event was witnessed: While we were monitoring his electroded white cell tracings in the lab, Col. Alexander was at the Backster School classroom then located in another wing on the same floor. Here the visiting group was viewing biocommunication-related slides being projected. Following the slides when Col. Alexander got up to speak before the group, back in the lab about 150 feet away, the previously tranquil tracing of his electroded white cells reacted dramatically. In all probability this was due to the momentary stress associated with starting his presentation to a somewhat skeptical group.

The chart recorded event was later shared with the committee. This supposedly open-minded group dismissed the observed event as possible interference from the building elevators. To address that possibility, the following day I collected a one hour chart tracing at the same time of day that the group visited the previous day to see if there was any response related to elevator activity. No chart response occurred. I sent a copy of the entire one hour chart to the research committee. No return comments were received. They had apparently

made up their mind as to the value of this high quality spontaneous observation.

Later John Alexander² authored an article in the March-April 1989 edition of *New Realities* responding to the National Research Council's final report on "Enhancing Human Performance." In his later rebuttal to a criticism of this article, John Alexander wrote: "[The research team] continues to ignore the work of [various scientists] who have repeatedly—under strict laboratory conditions—demonstrated statistically significant psi results. When do we have enough data to get over the hurdle of 'There is no evidence?' The data are there, and the experimental protocols long ago passed the point of being 'naïve.' My reaction is more sadness and frustration that novel technological approaches have a very difficult time getting a fair hearing in the hallowed halls of science. That applies to all fields—not just parapsychology. I submit that the basic issue is fear of the unknown – a trait unworthy of scientists."

BACK TO THE UNIVERSITY OF MISSOURI

In March of 1987, ten years after the support detailed in chapter 4, Dr. Charles Granger invited me to participate in the annual Missouri Junior Science, Engineering and Humanities Symposium, attended by award winning high school students from all over Missouri and sponsored by the U. S. Army Research Office and the University of Missouri. I was asked to be their "challenge speaker" giving the final presentation of the three-day conference entitled, "Biocommunication at the Cellular Level." My talk did indeed serve as a challenge to their still open minds and was well received.

BRIAN O'LEARY EXPLORES INNER SPACE

Brian O' Leary³ received his Ph.D. in astronomy at the University of California at Berkeley, has served on the faculties of Cornell University, California Institute of Technology, University of California, and Princeton University. He also received training as a NASA scientist-astronaut during the Apollo Space Program.

In August, 1988 I had the opportunity to become better acquainted with Brian during his visit to my lab with his prior "significant other." My lab associate, Steve White, collected oral leukocytes from Brian using the procedures included in chapter 7. The dialog which occurred between Brian and his ex-lady-friend provided ample opportunity for him to witness first hand extremely high quality chart reactions clearly illustrating the short range bio-communication capability between him and his electroded *in vitro* leukocyte cells.

An even more fascinating demonstration of the phenomenon over a longer distance occurred starting from the time Brian departed from the lab to go to the San Diego airport for his flight to Phoenix, Arizona, some 300 miles away. He left his still electroded leukocytes behind. Our prior research had shown that *in vitro* leukocytes on occasions have remained active in excess of ten to twelve hours.

It was previously agreed that he would keep an accurate log of events which might have caused him momentary anxiety. These included missing a turn on the freeway while returning his rental car to the airport, nearly missing his flight because of the long line at the ticket counter, his flight's departure and landing in Phoenix, his son's failure to meet him on time at the airport, and a number of other logged events. Later when comparisons were made by transferring the logged events to the appropriate portions of the chart recording, there was a good

correlation between chart reactions and nearly all of the perceived anxieties. His chart became very quiet after he returned home and retired for the evening. Brian described his visit to my lab and his reactions to his overall experience in his book entitled, *Exploring Inner and Outer Space*.

Since that initial occasion, Brian and I have become good friends. Other visits were made to my lab and he was very instrumental in arranging my participation as a keynote speaker at functions sponsored by the International Forum on New Science in Colorado.

THE SECRET LIFE OF YOUR CELLS

Although much has been written by others concerning my earlier biocommunication research in books such as *The Secret Life of Plants* by Peter Tompkins and Christopher Byrd,⁴ I had not undertaken the task of authoring my own book. It had initially occurred to me that working closely with an outside author might give me an opportunity to provide somewhat speculative material, which I might have been criticized for by the scientific community, had I overtly been the primary author. Over several prior years I had become acquainted with the late Robert B. Stone, Ph. D., through lectures we both provided for students studying the Jose Silva method of mental discipline. Working with the Silva group, particularly my participation in their international meetings, allowed me to travel to numerous foreign countries during the 1970's and 1980's. Robert Stone had authored or co-authored numerous books and agreed to closely collaborate with me while authoring the book entitled, *The Secret Life of Your Cells*, published in 1989.⁵ I worked closely with him, provided the material and checked the final version for accuracy. This book briefly reviews my work with

plants but concentrates on the *in vitro* testing of human cells. Although in its second printing in the U.S., I understand the Japanese translation is in its sixth printing.

FETZER FOUNDATION GRANT

In late 1989, my work with human cells *in vitro* came to the attention of the John E. Fetzer Foundation located in Kalamazoo, Michigan. This foundation's then stated purpose was: "Identifying and supporting innovative research in holistic health, seeking projects that recognize the importance of the whole person—body, mind and spirit—in the healing process." In conjunction with their "pioneer awards" program, I was asked to submit an application that related to my research to determine the influence of emotional states on human white cells *in vitro*.

In February, 1990 the application was accepted and my grant received. Although the amount was quite small, the effect on my morale was very large, as the notification letter stated: "We are very pleased to participate in this program as it represents an activity which is in accordance with and closely related to the health, research and education programs under way at our other supported institutions."

Since the death of John E. Fetzer in 1991 the reorganization of the foundation has tended toward awarding more and larger grants to institutions and universities and fewer awards to individuals and particular projects.

DOROTHY RETALLACK RESEARCH

In 1993, Dorothy Retallack, twenty years after the publication of her book, *The Sound of Music*

and *Plants*, mentioned in chapter 4, had just finished the manuscript of her planned second book entitled, *How Music Affects You and Your Plants, Too*. Her publisher had sent me a copy of her manuscript, and asked that I do the foreword. Having remained a friend of Dorothy's most of the twenty year period since her original book, I enjoyed reviewing her new material. In her preface she states, "I was asked to give many lectures and programs following the publication of my first book, *The Sound of Music and Plants* in 1973—257 presentations from then until now." Having endured many years myself defending my research I can truly understand pressures accompanying her twenty year period of dedicated effort. In December of 1993, during a telephone conversation with Dorothy I learned of her medical problems and of her temporary visit to Anchorage, Alaska, with a planned return to Colorado the following month. On February 17, 1994 she wrote me from Alaska regarding her ongoing chemotherapy, her loss of hair and loss of energy. Later that same year I learned of her passing.

THE INSTITUTE OF HEARTMATH

In September of 1993, I had the occasion to visit the Institute of HeartMath in Boulder Creek, California.⁶ Because of my primary perception experience in electroding and monitoring the variety of life forms mentioned in previous chapters, I was asked to indirectly participate in some research being conducted involving human nerve cells and cellular components such as deoxyribonucleic acid (DNA). Although previously in touch by phone, this was the first occasion for me to personally visit with a fascinating group of dedicated individuals selflessly working in this beautiful redwood area of California. Among other extremely qualified personnel, I

became best acquainted with Doc Lew Childre, founder of the Institute of HeartMath, Rollin McCraty, Director of Scientific Research at the HeartMath Research Center, and Mike Atkinson, Research Laboratory Manager. Of course one of my areas of continuing interest involves developing a method for electroding those giant redwood trees, some more than 250 feet tall.

Backster Research Foundation is a non-profit organization as is the Institute of HeartMath Research Center. In our interaction we found that each had excess equipment that could be loaned or transferred to each other. Later in 1993, I was invited to serve on the Institute of HeartMath Scientific Advisory Board and was invited in June of 1994 to attend a three day seminar as their guest. This was followed by their first Scientific Advisory Board meeting. The term of service on their board is one year and is reviewed annually by the Institute's Board of Directors in accordance with their by-laws. The composition of this advisory board includes such noted researchers as Joe Kamiya, Ph.D., Donald Singer, M.D., Karl H. Pribram, M.D., Ph.D., and William A. Tiller, Ph.D.

Considering the controversial nature of my research, I have felt honored to have been re-invited each year to serve on this board and to have attended all of the two-day yearly board meetings held to date. These occasions have been supplemented by additional trips, involving special research collaboration, allowed my witnessing the HeartMath lab's replication of my work with human leukocytes *in vitro*. Further collaboration is discussed toward the end of this chapter.

SOVIET SCIENTISTS VERIFY BIOCOMMUNICATION

As described in chapter 4, in 1972 I first learned of plant biocommunication research activity in the

Soviet Union through sparse news items. It was not until Christopher Byrd did the Russian-to-English translation of the popular-type article by Professor V. N. Pushkin entitled "Flower Recall," mentioned in chapter 4, that I realized they were reporting on their successful replication of my earlier work with plants. It was not until 1995, more than twenty years later, that I learned the depth of that research as reported in the English translation of the 1982 Russian textbook entitled, *Parapsychology and Contemporary Science* by A. P. Dubrov and V. N. Pushkin.⁷ A detailed description of the plant research of Pushkin, Fetisov, and Angushev is reported in the textbook chapter entitled "Communication between Man and Plants."

To my surprise I found that Alexander P. Dubrov, who has a Doctor of Science degree in Botany and a Ph.D. in Plant Physiology, was an adjunct faculty member at the California Institute for Human Science (CIHS) located in Encinitas, California.⁸ During July, 1995, while lecturing at CIHS, Prof. Dubrov insisted that a visit to my laboratory be arranged. He was brought from Encinitas to San Diego by Dr. Jerry Livesay, then Dean of Academic Affairs at CIHS, for a very enjoyable four hour visit.

In June of 1996, I was awarded an honorary Doctor of Philosophy degree by the California Institute for Human Science,⁹ and made a resident faculty member of that institution, where I have since periodically taught a course entitled "Cellular Biocommunication Theory and Research."

I would not want the reader to think that I have overlooked the irony of my earlier discussion in this

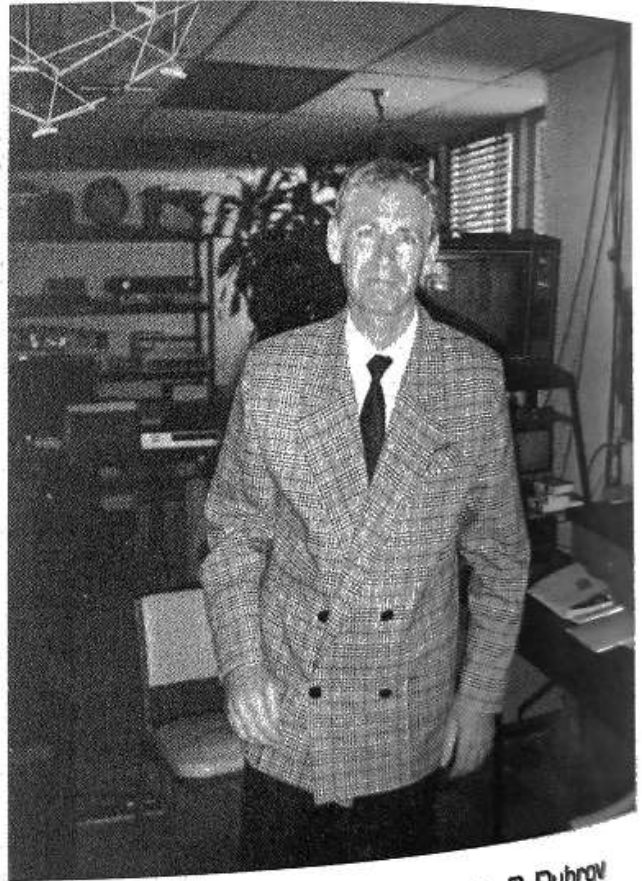


Figure 8A - A. P. Dubrov
During a Visit to the San
Diego Lab

book's introduction describing my initial work during the Cold War with the U.S. Army Counterintelligence Corps and the Central Intelligence Agency. I was then directing a search for unusual Soviet interrogation techniques, possibly utilizing hypnosis. Not until 1995 had I learned more details about the use of hypnosis by Soviet scientists to help in their replication of my plant biocommunication research. This was occurring at the same time when minimal attention was given my work by the U.S. scientific community. I had often wondered why, despite the language barrier, I was given such a favorable reception by Soviet scientists during my June, 1973 Prague trip to attend the International Conference on Psychotronic Research.

SRI LANKA VISIT

In December of 1996 I was invited to Colombo, Sri Lanka to participate in an alternative medicine conference sponsored by the World Congress of Locomotor Disorders, Rehabilitation, and Sports Medicine. The event was hosted by the Open International University for Complementary Medicines.¹⁰ Much interest was expressed in my presentation, "*In Vivo* Implications Based Upon Observation of *In Vitro* Cells and Their Human Donors." Later in the program I was awarded an honorary Doctor of Science degree by the University's Faculty of Medical Studies.

My trip to Sri Lanka was particularly fascinating as I had overlooked the fact that the country was in the midst of a kind of civil war. Scientists who had traveled from India attending that conference were especially interested in my research. This is likely because of the noted past research of Indian scientist, Jagadis Chandra Bose and his work on consciousness and emotionality in plants.

APA AND THE LEONARDE KEELER AWARD

It is interesting to note that my initial observation of plant biocommunication occurred in 1966, the same year as the founding of the American Polygraph Association (APA), the organization that absorbed the Academy for Scientific Interrogation mentioned in this book's introduction, along with several other smaller polygraph organizations. During the thirty-six years that have followed I felt it very important to avoid any "drop-out syndrome" when entering a new realm of endeavor, particularly one involving controversy. Your critics will almost always explore your background for less than flattering information. Knowing this, I have continued to value my standing in the polygraph profession, keeping others in that profession informed of my ongoing biocommunication research. Following the death in 1993 of Bob Henson, whose active participation in our biocommunication research is noted in earlier chapters, our polygraph school instructor, Tom Gray, became actively involved in the research. As a possible indication of success in maintaining my reputation within the polygraph community, in 1997 I was the recipient of their "Leonarde Keeler Memorial Award for Long and Distinguished Service to the Polygraph Profession." For the past 36 years I have given advanced polygraph training presentations at most all of the APA annual meetings, and am heavily referenced in the authoritative textbook entitled *Forensic Psychophysiology Using the Polygraph*.¹¹

SUN MAGAZINE

There was fascinating correspondence resulting from the article which appeared in the July, 1997 issue of *Sun Magazine* entitled, "The Plants Respond."¹² The responses from readers in the Sep-

tember through December issues that followed were diverse. One response stated:

"I am often disappointed with the gullibility of its authors and editors, who need to think more critically; otherwise they risk spreading bad ideas with the good. Cleve Backster for example, claims that cells scraped from inside your mouth will respond to your mood even when you're three hundred miles away. Why has no one else caught on to this miraculous discovery? Probably because you can't predict the results of such an experiment. These articles don't just share personal feeling and observations: They tout claims that should at minimum allow us to predict results. But they don't. Instead, they pillory science for not being more human."

And another response:

"Backster's claims are extraordinary and thus require extraordinary proof; he provides none. His experiments lack repeatability and control. His claims are bogus, but at least they are harmless."

My response to both:

The attitudes expressed here are not new to me. Unfortunately, almost without exception, such criticism has come from individuals who have made no attempt to become better acquainted with my research. Since first publishing my findings in 1968, I have lectured before more than thirty-five scientific and academic groups, including the AAAS. During the interview, I explained that repeatability is a problem when events must occur spontaneously, as is the case with biocommunication. The cliché, "extraordinary claims require extraordinary proof" sounds rather hollow when used to dismiss new ideas prior to widespread investigation. I see here a selective use of the principles of scientific method. A scientist is supposed to be a keen observer with an insatiable curiosity and a

desire to explain ordinarily unexplainable phenomena. I believe my research reflects this principle. Yes, the scientific method's expectation of repeatability is a problem in consciousness research. But this is no excuse for ignoring numerous high-quality observations suggesting that biocommunication exists.

If, as suggested in one letter, "there are plenty of grad students out there who would love to earn huge grants by showing 'primary perception' to be real," I would like to meet them. Since 1974, I have sustained a well-equipped lab, mostly self-funded, and have always offered unlimited access to graduate students wishing to conduct biocommunication research. But because of attitudes like those exhibited here, most students are afraid to make grant requests relating to such studies. Those who do express interest are told that this research is low priority, and to some it has been implied that such activity might be risky for their future.

On a more positive note, I believe that attitudes are changing among more open-minded researchers. Here in California, I am currently active on teaching staffs and research-related advisory boards with a combined total of more than a hundred scientists.

Perhaps what is needed is a fuller appreciation of the scientific method, one that recognizes that a measure of courage is helpful when exploring the unknown. To balance these attitudes, here is another point of view from a reader:

"I agree with the Buddhist and Hindu scientists who asked Backster, 'What took you so long?' For me, it's not Backster's experiments with plant communication that are amazing, but the fact that Western scientists have generally ignored the obvious."

Arthur Galston, the detractor at the 1975 AAAS symposium on my research, reveals an attitude I have encountered: "Why should we waste our time and research money and risk our careers on this sort

of thing?" It's not that all scientists are not listening, it's that the ones who should take the risk are not listening. Looking into primary perception should not be considered a risk.

AMERICAN SOCIETY OF DOWSERS

During the past three years it has been my privilege to have been visited each March by Walt Woods, now past president of the American Society of Dowsters, an organization tracing its origin back to 1961. Among others accompanying Walt Woods have been Inez Lindsey of the organization's San Diego chapter and Mardi Gieseler of their Tucson, Arizona chapter. Their literature defines dowsing as "an ancient art of searching for hidden things (water, precious metals, etc) using one of the senses that many of us are not even aware of possessing." My research with primary perception seems very much to overlap that same sense. Walt Woods and I are eager to design some experiments that address such concepts that seem to be common to their discipline and my research.

INTRODUCTION TO THE UNIVERSITY OF SCIENCE AND PHILOSOPHY

Through Brian O'Leary, mentioned earlier, I first met Paul Von Ward in Fort Collins, Colorado where we were both keynote speakers before the 1991 International Forum on New Science. Paul is a Cosmologist, lecturer, and the author of a fascinating book entitled *Our Solarian Legacy*.¹³ For more than ten years we have exchanged correspondence, visits, been presenters on the same program, and have become good friends.

After interviewing me in connection with one of his monthly articles for a journal, *The Cosmic Light*, published by University of Science and Philosophy,¹⁴ I was introduced by Paul to that organization's Chief Executive Officer, Yasuhiko Kimura, and Laara Lindo, their Director of Education, both of whom later interviewed me at length for an article entitled, "*The Secret Life of Cleve Backster*."¹⁵ I have since been active in their nationwide programs and, in May 2001, was awarded their first Walter Russell Award for "Outstanding Lifetime Creative Achievement in Frontier Science." Also, Paul Von Ward and I are at times involved in research projects related to biocommunication.

ENHANCEMENT OF HUMAN FUNCTIONING

The Center for the Improvement of Human Functioning is located in Wichita, Kansas and is headed by Hugh D. Riordan, M.D. During the past fifteen years, conferences have been organized by Dr. Riordan and have provided programs primarily related to holistic health. In September, 2000 I was invited to a special conference on human functioning. As one of the faculty members participating in earlier conferences, during this occasion I was one of those honored for pioneering work.

Prior to attending, I was asked to provide a one or two page message of whatever I thought most appropriate for inclusion in the conference syllabus. In preparing a reply, I expressed my concern over the critical relationship between the spontaneity required for meaningful observations of biocommunication at work, and the repeatability requirements contained in the current interpretation of the "scientific method." I felt it important to include that statement here in its entirety:

THE ISSUE OF REPEATABILITY

Since my February 2, 1966, initial high quality observation of apparent consciousness in a dracaena cane plant attached to the galvanic skin response (GSR) component of a polygraph, I have consistently been able to observe a similar capability not only in other plant life, but also in chicken eggs and a variety of microscopic forms of life. My research has now extended to the monitoring of the interaction of human cells *in vitro* with their human donor. During the ensuing years I have maintained a well-equipped laboratory, have lectured extensively before academic groups, scientific organizations and the public in general. In addition to two articles in scientific journals, numerous popular-type articles have appeared describing the biocommunication phenomena which I have termed "primary perception."

My more important advice to those wishing to experience similar observations of my work stresses the need for spontaneity. By utilizing appropriate recording instrumentation and establishing an audio or video playback procedure, time coordinated with the chart recordings, success can be achieved. To assure spontaneity, it is imperative that the researcher not focus on the recordings in "real time." During these past years dozens of scientists have been able to study the correlation between spontaneous events occurring in the immediate environment and the tracings produced by the living material being monitored. The suggested biocommunication capability has been hard to miss.

Although such delayed observational correlations are not presently acceptable as a substitute for the scientific method's featured "replication" requirement, it has allowed a basic evolution in personal consciousness for many of those involved. After numerous attempts to design a repeatable

experiment, the weakness of such a traditional approach has become increasingly evident. Because such biocommunication phenomena may well be a promising component of consciousness research, their potential importance is apparent. If such phenomena requires spontaneity, a basic conflict exists as related to the accumulation of traditional scientific data requiring repetition of the same event. Also unique, yet important when researching consciousness, is the possible contamination of the experiment results by the conscious intent of the researcher being communicated to the biological material being tested. Much of my work suggests this to be a strong possibility.

In examining the requirements outlined by the current version of the "scientific method," it occurs to me that another requirement appears to be quite consistently ignored by many respectable scientists. This relates to the prescribed insatiable curiosity of the researcher to pursue "mysterious occurrences" to some degree of finality. I have worked with biocommunication occurrences, still termed by the traditional scientists as being "mysterious," for the past thirty four years. During this period many protectors of the current body of scientific knowledge have chosen to ignore hundreds of high quality spontaneous biocommunication observations because no single event can be made to occur repeatedly in order to collect "significant" data.

If we are to make progress in consciousness research, it would seem that an appropriate modification of the "repeatability" requirement might be a fair exchange for leaders in the involved scientific disciplines to adhere to all aspects of the "scientific method." To accomplish this would require devoting time and effort toward resolving this lingering biocommunication "mystery." Having passed my seventy-sixth birthday, my only remaining contributions will involve maintaining my laboratory and my non-profit research foundation, publishing an

in-progress book, telling others how to easily observe "primary perception" phenomena, and allowing others to further address this issue of repeatability – the stumbling block of a scientific revolution in consciousness.¹⁶

[End of statement]

NORMAN FRIEDMAN ON CONSCIOUSNESS

In recent times, the advent of quantum physics has shed new light on the dynamics of biocommunication and repeatability. In response to my editor's e-mail query, Norman Friedman, author of *The Hidden Domain*,¹⁷ has offered this explanation:

During the Newtonian era, several ideas were accepted by the physics community. (a) A given arrangement of matter produces consciousness. (b) If matter follows deterministic laws that were known or were yet to be discovered, then consciousness should fall into the same category.

After the discovery of relativity and certainly quantum theory, this approach is no longer valid. (a) In relativity, such concepts as space and time are dependent on the observer and his or her velocity. (b) Also, according to my version of quantum theory, matter does not produce consciousness. It is the other way around. Consciousness produces material events. This is done by "choosing" from a latent field of probable events. The latent field can be labeled Heisenberg's *potentia*. In fact, probabilities are our freedom.

From the above, we can briefly say that probabilities are the freedom of consciousness. Therefore, there is no assurance of repeatability.

During the past thirty six years, I have often stated that I attribute my success in interacting with various scientific disciplines to my not being tempted to explain the mechanism of primary per-

ception and the related biocommunication phenomena. I am increasingly being convinced that logical explanations will more often have as their source the quantum physicist.

BIOCOMMUNICATION PRESENTATION AT BIOFEEDBACK SOCIETY

During November of 2001 I was honored to have been asked to be the luncheon speaker at the San Diego meeting of the Biofeedback Society of California. I have maintained a long-standing interest in biofeedback, feeling that numerous observations I have made during my research have suggested a separate communication ability in humans, capable of by-passing use of the more conventional chemical messenger system and the autonomic nervous system. As noted earlier in this chapter, one of the pioneers in biofeedback research, Joe Kamiya, has also served on the Institute of HeartMath advisory board since its inception. Biofeedback, for those less familiar with the procedure, is part of the field of alternative medicine and involves the monitoring and visual feedback of physiological information, such as heart beat or muscle activity, for the purpose of instructing a client to learn to change or regulate the process being monitored.

PRESENTATION AT REMOTE VIEWING CONFERENCE

During June 14-16, 2002 the International Remote Viewing Association held a conference in Austin, Texas, commemorating the thirty-year history of the acknowledged practice of remote viewing. I was asked to give a presentation at this conference. In anticipation of your curiosity of what

remote viewing is, I will quote from their association literature: "Remote Viewing is a skill developed to take advantage of a normal human mental faculty that allows a perceiver (a viewer) to describe or give details about a target that is inaccessible to normal senses due to a distance, time or shielding."

Back in New York City in 1972, I had inadvertently provided the original contact between two historic figures central to the start of the 30 years history of remote viewing, Ingo Swann and Hal Puthoff. The Remote Viewing Association¹⁸ literature also states that the procedure was "used extensively by the so-called psychic spies during the Cold War for classified military projects." My presentation was entitled "Hypnosis Experiments Involving a Practice Similar to Remote Viewing." This talk related to my early work with hypnosis some sixty years ago, mentioned in the Introduction, as well as aspects of nonlocality common to my primary perception and related biocommunication research.

UNIFIED SCIENCE CONFERENCE

From September 21 to September 27, 2002 the previously mentioned University of Science and Philosophy (USP) sponsored a closed event in Los Angeles entitled The Unified Science Conference — The Nature of Space and its Relationship to Consciousness. Our gracious hosts were Yasuhiko Genko Kimura, CEO and Director of the Science Program and Laara Lindo, then President of the University of Science and Philosophy. I was honored to have been invited as one of more than twenty in attendance, primarily scientists and philosophers. Twelve of us were each asked to present to the group a three hour block.¹⁹ The first half of the allotted time was a formal presentation. The last half involved an integrative group dialogue, which also

included the remaining USP science staff and guest observers.²⁰ With such participant presentation titles as "Connectivity in Nature and Consciousness," and "Consciousness-based Biology and Biology-based Science" I truly enjoyed the entire six-day program and was very pleased with the positive reception of my presentation entitled, "Primary Perception as a Basis for Biocommunication." The content of my talk included some practical examples involving possible nonlocality, a subject often referred to by other speakers.

UNIVERSITY OF ALABAMA- BIRMINGHAM

The last reflection of this sixteen-year update of the reactions of the scientific establishment concerns a December, 2002 development. On January 30, 2002 Paul Von Ward, mentioned earlier, interested Myra Crawford, Ph.D. in visiting the Backster Research Foundation lab while she was in San Diego for another project. Dr. Crawford is Director of the Division of Research for the Department of Family and Community Medicine at the University of Alabama-Birmingham (UAB). During her lab visit she volunteered to be an oral leukocyte donor. Two chart examples extracted from her white cell session were included in the last chapter. (*See figures 7J and 7K*). We owe her daughter Regina a thank you for having the need to call her mother right at the moment she did, activating a meaningful chart response.

Following her return to Birmingham, Dr. Crawford was asked via E-mail by my editor, Francis Prowse, who also attended that session: "What do you feel you learned?" Her reply was "I have been shown in a scientific demonstration, the apparent reality of conscious nonlocal instantaneous communication between my thoughts and my cells."

Since Dr. Crawford is associated with the Uni-

versity of Alabama School of Medicine, I believe that the holistic health implications of our research are apparent as interest was expressed by her in possibly establishing a biocommunication laboratory at the UAB. On March 21-22, 2002 Dr. Crawford returned to Southern California to attend the Deepak Chopra Center's First International Symposium. The affair was in La Jolla, a few miles north of San Diego. An evening reception was held on March 21, 2002 and a full day and evening of lectures occurred on March 22. I was also invited to attend this function as Deepak's guest. Four of the seven speakers were physicists. Nonlocality was a subject of common interest through most of the presentations. This gathering provided an additional opportunity for Dr. Crawford and me to discuss the progress of her planned biocommunication lab.

On July 8-9, 2002 Dr. Crawford, accompanied by Barry Patterson, spent two days at our San Diego lab. Barry is involved as a research assistant at UAB and was active in establishing the lab. This visit allowed him to learn first-hand our procedure for collecting and electroding oral leukocytes. During the following two days, Dr. Crawford, Barry Patterson and I flew to San Jose and traveled by car to the Institute of HeartMath. Barry Patterson also had a prior connection with the Institute of HeartMath. He has attended a training certification program in HeartMath Emotional Management and returned to Alabama to train the faculty and staff in Dr. Crawford's department. During our two days at the HeartMath Research Laboratory discussion occurred with Rollin McCraty and his staff relating to various areas of mutual interest. On the second day, in response to a question relating to the scope of my research with human blood, I was asked if I had ever tested whole blood. My answer was, "No, not in any careful manner," followed by "Why don't we try it?" An interesting research session then followed. Barry Patterson volunteered to contribute two 5 ml. test

tubes of blood, which were collected by Jackie Waterman, a qualified research staff member at the HeartMath lab. One of the two samples was electroded by Mike Atkinson, the research lab manager, in a manner similar to that developed in my San Diego lab. Two gold wire electrodes were immersed into a 5 ml. test tube of whole blood and wired directly into the HeartMath lab's instrumentation. Two examples extracted from that research session were also included in the last chapter. (*figures 7L and 7M*).

Following their return to Alabama, work was started toward locating space and the necessary equipment for establishing Dr. Crawford's Human Energetics Assessment Laboratory. Their first intended priority, using my research protocols, was to replicate the work with oral leukocytes. On December 20, 2002 the following message from Dr. Crawford was relayed to me: "The UAB Human Energetics Assessment Laboratory is in operation! Barry and I announced that we successfully accomplished the testing of human cells in vitro today."

It is with great pleasure that I end this chapter's sixteen year update on such a positive note. The Backster Research Foundation is looking forward to further collaboration with the University of Alabama – Birmingham and our continuing association with the HeartMath Research laboratory.

NOTES:

1. Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago, University of Chicago Press, 1962).
2. John Alexander is currently associated with the National Institute for Discovery Science located in Las Vegas, Nevada.
3. Brian O'Leary, *Second Coming of Science* (Berkeley, CA: North Atlantic Books, 1992) Also, *Exploring Inner and Outer Space*, (Berkeley, CA: North Atlantic Books c1989).
4. Peter Tompkins and Christopher Bird, *The Secret Life*

of Plants (New York: Harper & Row, 1973). This book, previously noted in chapter 4, has been in continuous publication for the past 29 years.

5. Robert B. Stone, Ph.D., *The Secret Life of Your Cells* (Westchester, PA: Whitford Press, 1989).

6. Howard Martin wrote about HeartMath: "An innovative view of psychology, physiology, and human potential that provides a new model for efficient living in the modern world through tapping the hidden power of the heart." Included on their Scientific Advisory Board are:

- Joe Kamiya, Ph.D., Originator of biofeedback technology,; former Professor of Medical Psychology, Research Psychologist, University of California, San Francisco.

- Donald Singer, M.D., F.A.C.P., F.A.C.C., F.C.C.P.; Specialist in heart rate variability, former Director of the Reingold ECG Center, Professor of Medicine and Pharmacology, Northwestern University School of Medicine.

- Karl Pribram, M.D., Ph.D. (Hon.) Neurological Surgery, Medical Psychotherapy; Professor Emeritus, Stanford University, Distinguished Research Professor, Georgetown University, Washington D.C..

- William A. Tiller, Ph.D., Physicist, Mathematician; Professor Emeritus, Dept. of Materials Science and Engineering, Stanford University, Stanford, CA.

For a complete listing of the Scientific Advisory Board and the Physics of Humanity Council, see http://www.heartmath.org/ResearchPapers/soh/soh_68.html

7. A.P. Dubrov and V.N. Pushkin, *Parapsychology and Contemporary Science*. (New York and London, Consultants Bureau, 1982).

8. Dr. Alexander P. Dubrov was at that time Senior Researcher at the Moscow Academy of Science's Institute of General Genetics and for years was a research fellow at the USSR Institute of Biophysics.

9. The California Institute for Human Science, founded by Hiroshi Motoyama, PhD. has maintained its approval status as a graduate degree granting institution by the Council for Private Post-Secondary and Vocational Education in accordance with all regulatory guidelines posited by the California Education Code 94310. Effective dates of the then current approval were January 1, 1996, to December 31, 1999.

10. The Open International University for Complementary Medicines was established by virtue of the 1962 World

Health Organization Alma Ata Declaration, and a 1980 United Nations General Assembly Resolution.

11. James Allan Matte, Ph.D. *Forensic Psychophysiology Using the Polygraph*. (Williamsville, NY: jampublications) E-mail: jampublications@mattepolygraph.com.

12. *Sun Magazine* – July, 1997 Article, "The Plants Respond," by Derrick Jenson.

13. Paul Von Ward, *Our Solarian Legacy – Multidimensional Humans in a Self-Learning Universe* (Charlottesville, VA. Hampton Roads Pub., 2001) Sequel to *Solarian Legacy: Metascience and a New Renaissance*.

14. University of Science and Philosophy - formerly the Walter Russell Foundation, as stated in their literature, is an "Open University for Integral Learning and Transformational Study in Universal Law, Natural Science and Living Philosophy." See www.philosophy.org; www.twilightclub.org.

15. Secret Life of Cleve Backster article by Yasuhiko Kimura and Laara Lindo in Spring, 2001 issue of the *Cosmic Light*, the quarterly journal of the University of Science and Philosophy.

16. Prepared for the 15th International Conference on Human Functioning, September 22 - 24, 2000. Wichita, KA. Sponsored by Dr. Hugh Riordon, Bio-medical Synergistics Education Institute, University of Kansas School of Medicine – Wichita.

17. Norman Friedman, *The Hidden Domain, Home of the Quantum Wave Function, Nature's Creative Source*. (Eugene, OR: Woodbridge Group, 1997). He has written other books as well.

18. For books on the subject of remote viewing, see this site and others: <http://www.rvconference.org/Books.shtml>

19. Presenters at the September, 2002 Unified Science Conference, in the order of their presentations, were: Ashok Gangadean, Philosopher, Logician; Cleve Backster, Experimental Scientist, Biocommunication Pioneer; Milo Wolff, Theoretical Physicist, Astronomer, Engineer; Foster Gamble, Cosmic Geometer; Chester Hatstat, Materials Scientist; Vladimir Ginzburg, Mechanical Engineer, Technical Scientist; Ervin Laszlo, Philosopher, General Systems Theorist; Teruaki Nakagomi, Quantum Physicist, Computer Scientist; Wing Pon, Theoretical Physicist, General Systems Theorist; Thomas Brophy, Planetary Astrophysicist, Archeoastronomer; Elisabet Sahtouris, Evolutionary Biologist; Paul Von Ward, Cosmologist.

20. Among the observers not giving formal presentations were Charles Warble, Materials Scientist; Jerry Williams,

Electrical Engineer; Mark Cummings, Frontier Science Researcher; Mark Pecan, Engineer, Physicist; Ed Edwards, Physicist, Evolutionary Theorist; Eva Olds, Communication-Language Expert, Educator; Linda Olds, Integral Psychologist, General Systems Theorist; and Glenn Olds, Philosopher, past Ambassador to the United Nations, past President of five university systems and special assistant-advisor to four past U. S. Presidents.

CHAPTER NINE

Future Biocommunication Research

Prior to listing possible areas for future biocommunication inquiry, it might be useful to review broad implications suggested by my research to date. One concern in such biological experiments has to do with experimenter intentions. Can a very negative, or even a very positive experimenter attitude, regarding expected results have an effect on the outcome of an experiment? Our preliminary observations suggest it can. One approach to resolving this question would require total automation of the experiment. This would attempt to remove the consciousness of the experimenter from the laboratory environment. Such a process was described in chapter 3, involving plants responding to the death of brine shrimp.

Following are several more speculative areas, perhaps with philosophical overtones. The beneficial implications of each would seem to justify additional research. With sufficient funding such research should be quite practical to conduct.

LONG RANGE COMMUNICATION

There appear to be some unique characteristics indicated by our observation of the basic nature of biocommunication. The three related questions I am most often asked are about the speed of the communication transmission, its distance limitation, if any, and its susceptibility to shielding.

At earth distances the communication speed has been difficult to determine, due to the short biological delays experienced between the communication reception time and the resulting electrical discharges recorded on our EEG-type instrumentation. If the transmission is significantly faster than the speed of light, the speed of conventional radio transmission, it could be researched during distant U. S. National Aeronautics and Space Administration (NASA) sponsored space missions. Confirmation of a speed faster than the speed of light could have enormous implications for future missions.

Our research has revealed evidence that the physical distance between human cells *in vitro* and their donor appears to present no transmission problem. The published white cell report discussed in chapter 8 involved distances up to fifteen miles from the lab to the donor's location. Another experiment mentioned involved the distance between San Diego and Phoenix, Arizona.

As to communication shielding, we have utilized a very sophisticated shielded room at the California Institute for Human Science (CIHS) at Encinitas. The room is designed to filter out all conventionally understood electromagnetic frequencies. On two separate visits, Tom Gray, mentioned in the last chapter, Steve White and I, along with Dr. Gaitan Chevalier, Director of Research at CIHS, confined within the room plants attached to GSR instrumentation and bacteria attached to EEG instrumentation. We noted no difficulty correlating

the human stimuli outside the room with chart reactions recorded by the instrumentation.

Having recently attended conferences mentioned in chapter 8, including quantum physicists as presenters, I noticed that "nonlocality" was often mentioned as a concept that would impose no communication distance limitation and would have "zero time consumption." Some physicists have expressed an opinion that my presented examples of biocommunication over a distance would be explainable by characteristics embraced by the nonlocality concept. We are anxious to collaborate with NASA for some really long range experiments, such as a Mars mission, where 20 to 30 minute transmission delays are experienced when using conventional communication methodology.

SPIRITUAL ASPECTS

I have no intention of delving into a discussion of comparative religion, but I can speak about my earlier personal life experience with organized religion. My father was the superintendent of our small town Presbyterian Sunday School for many years. I was awarded a small jewelry pin for the first year of perfect Sunday School attendance, an attachable wreath to encircle the pin for the second year, and a separate inscribed bar for each of the ten years that followed. I had somewhat of a scientist's mentality even at the age of seventeen. When I left home to attend the prep-school equivalent of my third year of high school, I decided to allow that to be the first of a twelve-year, self-imposed vacation from organized religion. I would, at the end of that period, then *assess* the value of those first twelve Sunday School years.

At prep school I quickly became involved in the extra curricular study of hypnosis. This led to my attributing many aspects of the religion that I had

been exposed to as speculative and perhaps better explained by suggestibility. This term was used in the available literature on hypnotism to describe the state when introducing ideas into a subject's mind was easy. In this book's introduction I told how my attitude was further modified during my 1942 trip to California through interaction with Don Joslin and our discussion of Theosophy¹ and other aspects of Eastern philosophy. As I became better informed of many systems of religious belief, one thing that seems to exist in common was the belief in a Supreme Being, often referred to as God.

As we enter the twenty-first century, the increasing number of distant stars believed to have planets similar to earth, contribute toward a dilemma relating to the location of this Supreme Being. Surely all of those far flung planets would be included within the influence of a truly Supreme Being. It was not until I became deeply involved in biocommunication research that it occurred to me that science has never provided a reasonable explanation concerning how prayer and meditation, particularly over vast distances, could be effective when the time required for such communication was confined to the speed of light. Estimates have been given by scientists that the fastest conventional communication could take thousands of light years to traverse the vast distances embraced by our universe.

Very soon after 1966, the year I electroded the original plant, it also occurred to me that this biocommunication capability, consistently being demonstrated during my research, had apparently been completely overlooked by the scientific community. Based on this insight I saw the need to re-evaluate my earlier rejection of prayer and meditation as being mere speculation, that rejection having been based on a lack of scientific evidence. This re-evaluation, reinforced by current concepts within quantum physics, such as nonlocality, has resulted in a significant escalation of my own spiri-

tual awareness. I can only hope that encouraging others to become personally active in observing examples of biocommunication may also provide for them an additional source for expanded spiritual insight.

HOLISTIC HEALTH

There appear to be both negative and positive implications relating to revelations about biocommunication and holistic health. Our research with human cells *in vitro* suggests that a communication system exists within one's body quite separate from the well-known autonomic nervous system. Using EEG-type instrumentation, we started our initial observations using sperm and continued our research with human cells. This was initially limited to the monitoring of oral leukocytes, but more recently we have initiated the monitoring of whole blood.

If certain of the human donor's thoughts are picked up, as they certainly seem to be, with *in vitro* oral leukocytes and *in vitro* whole blood, it suggests that other cells of the body may also be influenced by the quality of the donor's thought process and emotional state. Our chart recordings indicate extensive electrical discharges at the cellular level, in the microvolt range. These discharges accompany the donor's negative thought processes and strong emotional arousals.

It is possible that varieties of illness may result either from the expression or the suppression of such negative thoughts or emotional displays. Additional study might more realistically reinforce reasons for positive thinking and for more effective management of one's emotions.

OTHER IDEAS FOR CONTINUING RESEARCH

The capability for long term monitoring, using biological sensors, suggests a number of areas that might prove beneficial in medical, psychological and social research:

1. Monitoring of a cell sample of a human donor undergoing surgical procedures. Already, videotapes of such procedures are often made and could be time correlated with the *in vitro* cell sample tracings, using EEG type instrumentation.
2. Use of a biological sensor during individual or group therapy sessions to help locate emotional "hot button" areas requiring additional attention.
3. Using a biological sensor during the pre-testing of television entertainment and commercials. Years ago I participated in similar pre-testing research involving the monitoring of individuals and groups with GSR instrumentation, which then required direct wire attachments between each individual and the GSR instrumentation.
4. Monitoring of a cell sample from a sports figure, such as a team quarterback, during a live TV broadcast of the football game. The cell sensor chart readout could then be time correlated with the videotape of the broadcast game. If the quarterback got sacked, or made a spectacular pass to a teammate, or one that was intercepted, one might expect a large chart reaction. A similar system could be used for many other sports.
5. With agriculture, there may be some interesting solutions to problems that could be solved by the sensor monitoring of crops in regard to

their likes and dislikes of fertilizers, pesticides and climate. Perhaps even the farm workers' attitudes could influence the crop's growth.

6. For some time I have been interested in developing a practical method for attaching a sensor and monitoring one of those large redwood trees. In the Boulder Creek area, where the Institute of HeartMath is located, some of the trees are hundreds of years old. If we could somehow get those trees to communicate, I wonder what they would tell us.

FUTURE INSTRUMENTATION AVAILABILITY

In order to more effectively stimulate the required interest within the scientific establishment for research projects such as those just mentioned, I believe it is extremely important for as many as possible to experience their own observation of biocommunication at work. This would seem especially desirable for young people with minds still open to the unusual.

I frequently get requests from pre-college students wanting to include biocommunication phenomena in their "science fair" projects. Instrumentation availability has been a constant problem. Much of my earlier research utilized GSR type instrumentation such as that included in most all modern polygraphs. This equipment is beyond the reach of the young people I would like to see involved. My more recent work has used EEG and EKG type instrumentation, the availability of which is difficult.

For thirty-six years, almost any living substance I have electroded with either GSR, EKG, or EEG type instrumentation has shown reactivity along with sensitivity, which I have identified as "primary perception." Such events are not like Halley's Comet

which can only be observed every seventy-six years. Any open-minded person with adequate instrumentation can witness the phenomenon, particularly as related to spontaneous events.

I have no intention of spending my limited number of remaining years debating with those who claim, "Extraordinary claims require extraordinary proof." Extraordinary proof that requires repeatability rules is incompatible with the spontaneous nature of this phenomenon. A possible long range solution to this problem entails making available to the curious and open-minded individual a comparatively inexpensive EEG-type device which will be portable and in all probability battery powered.² A continuing effort of the Backster Research Foundation, financed in part by my share of the profits from the sales of this book, will be devoted to promoting the availability of such a device. With such equipment, enough individuals can experience the effects of their spontaneous acts and thoughts, making the issue of repeatability less relevant.

In addition to acquiring such an EEG-type device it is extremely important that a "playback" system be established using an audio or video recorder when a chart recording device is not available. If the device has a meter as an indication of the amplified signal a camcorder should be focused on that meter during the session. If the device has a tone indicator, a tape recorder should be recording the tone changes and the audible activity of those in the area.

In terms of experimental design it is extremely important that one does not watch the meter while reactions occur. Keep it spontaneous! Allow events to occur and then, and only then, go back to replaying the video or audio tape to correlate events occurring with possible reactions from the biological sensor utilized. It is natural for scientists to sit and watch the chart read-out of their instrumentation. This is one time when this practice is counter-productive.

As I complete the last chapter of this book, I wish to express my appreciation to those scientists who have given me open encouragement during the past thirty-six years and also to those who have allowed my affiliation with activities such as those mentioned in chapter 8. However, it is now time for more scientists to openly confront this widespread phenomenon of primary perception. Please be assured that it is not going to go away.

To those who wonder why I feel such confidence, as one person who has experienced the indifference of many scientists to this field, I can simply state that such high resistance to new ideas does not concern me. I have a truly wonderful ally: Mother Nature.

NOTES:

1. The Theosophical Society, based on the teachings of "Theosophy"—the word comes from the Greek *theos*, meaning god, and *sophia*, meaning wisdom. A synthesis of science, religion and philosophy, Theosophists believe that man has an eternal immortal nature, a radiation of the Universal Soul. See various websites.

2. The Institute of HeartMath has replicated a number of my findings and has designed a battery-powered instrument that is "tuned" to the typical type of response we see from plants and other living systems. It is similar to an EEG device in sensitivity, but eliminates much of the noise you get with a standard EEG device, which makes it suitable for home use. I already have a prototype in my possession and it works quite well.